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The Journal of the Fire Protection Profession

OCTOBER 15, 1930

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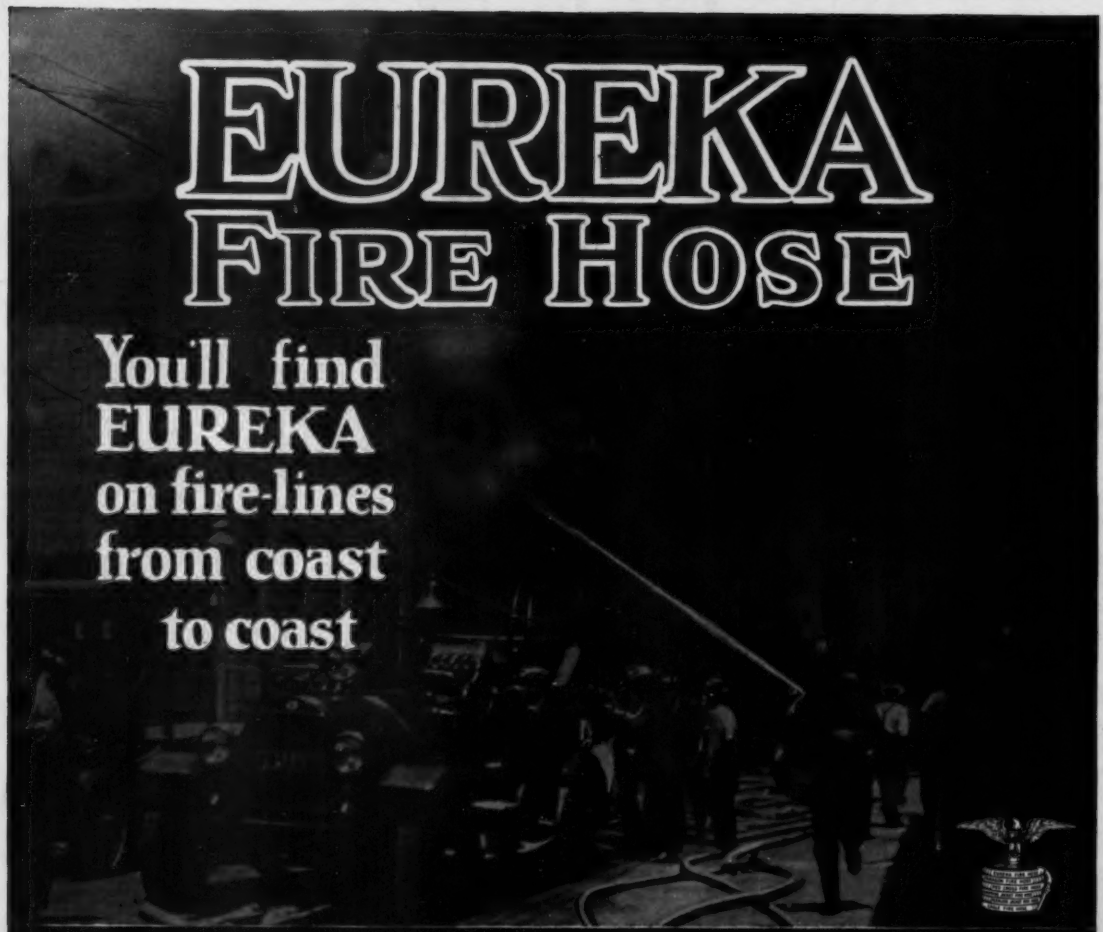

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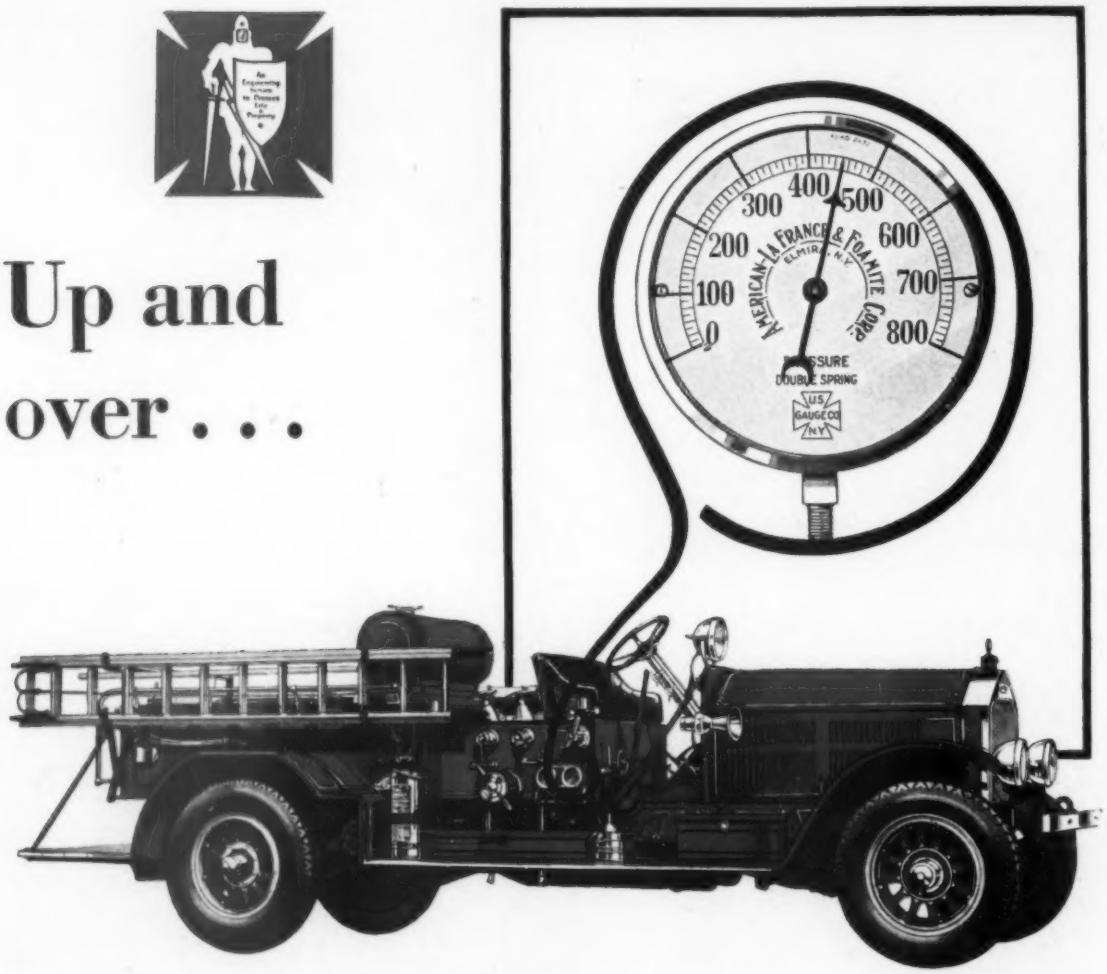

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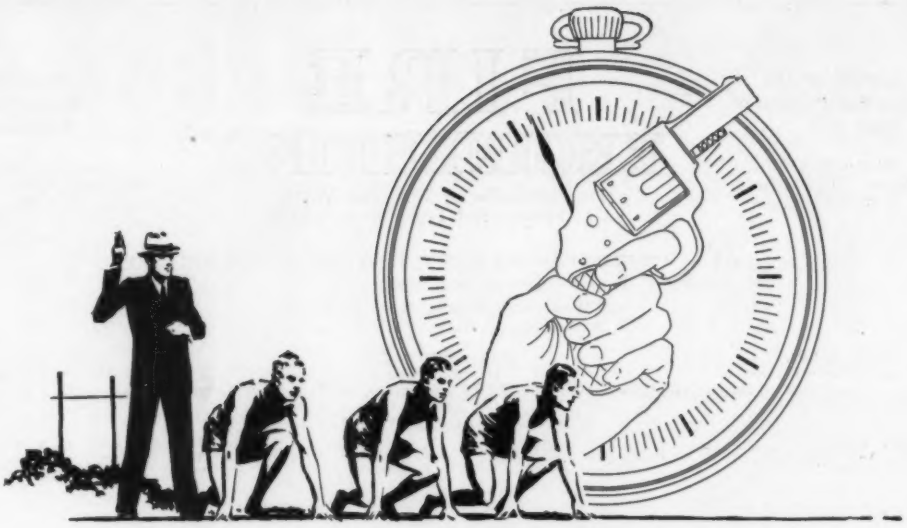

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FIRE ENGINEERING

A Consolidation of FIRE AND WATER ENGINEERING and THE FIRE ENGINEER

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IT has been said that the nearer any disease approaches a crisis the nearer it is to a cure.

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"It's time to head in another direction.

"The world of business has no use for a man who can't stand a little punishment. Times will be better when we make them better; nobody else is going to do it for us.

"If anyone is going to fall dead from shock if you suggest their buying something, then go ahead and deplete the population. The only way to make sales is to go out and act as if you expected to make them. If the first man you talk to stops breathing, go ahead and look up another; they won't all die on you.

"Mr. Roger W. Babson, the world's greatest statistician, says business is now on the upgrade. He predicted the slump—he ought to know when it's going to end. Roger also said if everybody would go along and talk and act as if they expected to do business, they would get it.

"This standing around at the back door waiting for a 'hand out' never got anyone anywhere. The way to attract attention is to go in the front door, pound on the table and demand something to eat!"

The Publishers

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The Journal of the Fire Protection Profession

VOLUME LXXXIII OCTOBER 15, 1930 NUMBER 21

The Deadly Dust Explosion—Its Cause and How to Prevent It

Theory of Dust Explosion—Great Peril from Such Blasts During Fire Fighting—Exposure Hazard—Periodical Inspection Needful

By DAVID J. PRICE, Principal Engineer in Charge, Chemical Engineering Division, U. S. Dept. of Agriculture

THERE is hardly a fire department that has not within the territory which it is responsible for guarding from fire some factory or industrial establishment in which the hazard of floating dust is present in more or less degree. The following paper will therefore be of general interest and value:

David J. Price.

It has been very gratifying to fire and explosion prevention engineers to observe the splendid interest manifested by firemen in research studies on explosion and fire prevention. This interest has extended beyond the actual extinguishment of fire and has also included the acquiring of fundamental knowledge regarding the control and prevention of explosions and fires.

The results of special studies by the Chemical Engineering Division of the Bureau of Chemistry and Soils of the United States Department of Agriculture show that under favorable conditions a dust explosion can occur in any industrial plant or manufacturing establishment where combustible dust is created during operating processes.

For some time it was generally assumed that the largest number of dust explosions occurred in grain handling plants. A recent survey has shown that the dust explosion hazard exists in a wide range of industries, such as pyroxylin lacquers, sulphur crushing and pulverizing, rubber recovery, starch manufacturing, sugar refining, wood working plants, cork pulverizing, aluminum, zinc and magnesium plants, fertilizer plants, spice plates, pitch grinding and pulverizing, rosin handling, powdered milk plants, chocolate and cocoa plants, celluloid and textile plants.

This survey covers a study of 97 dust explosions in 15 different lines of industries, exclusive of the grain handling industries. It is evident that these explosions are occurring in new lines of industry in which on account of increased production, utilization of by-products, and introduction of new manufacturing processes, dust is produced and additional dust explosion hazards are created. Many of these explosions have occurred in industrial plants in the United States and Canada. Approximately 28,000 industrial plants in the United States are subject to the dust explosion hazard and should adopt precautionary measures. These plants employ more than 1,325,000 people and manufacture products of an annual value in excess of ten billions of dollars.

Some Early Dust Explosions

The *American Miller*, in the issue of January, 1889, refers to an explosion of flour dust reported in the Memoirs of the Academy of Science of Turin, Italy, which occurred in a flour warehouse on December 14, 1785. This report states that the flour dust was ignited by an open flame lamp. In the investigation of this explosion evidence was secured which indicated that a similar explosion occurred in Italy as early as 1755.

One of the earliest explosions of any importance in the United States occurred in the Washburn Flour Mills in Minneapolis, May 2, 1878, in which eighteen lives were lost and a number of buildings were destroyed. An explosion of middlings dust is reported to have occurred in an Illinois mill as early as 1864.

On July 9, 1872 a violent explosion occurred at the Tradeston Flour Mills near Glasgow, Scotland, in which 18 persons were killed, 16 injured and the property damaged to the extent of about $350,000. This explosion awakened considerable interest in the possibility of flour dust explosions.

"Oatmeal Explosion"—1888

The public is always interested when a new kind of "mysterious industrial explosion" occurs. Unusual interest was manifested as the result of an explosion in an oatmeal

"Since the ignition sources of explosive dusts are practically identical with those of explosive gases we can readily understand that anything which will ignite explosive gases will also ignite explosive dust clouds. One of the principal factors in the explosibility of a dust appears to be the degree of fineness."—Court Decision.

mill in Chicago on December 11, 1888. The report states that this explosion was heard several miles away and "hundreds of people were awakened, many of them thrown from their beds."

This explosion provoked considerable discussion in the popular press, all centering on the possibility of an "oatmeal explosion.' One of the Middle West papers seemed much concerned over the fact that "this is the first time it has been suggested that oatmeal has volcanic properties, its worst characteristics in the popular mind, being its disposition to irritate the skin and set a man to rubbing his back against the door jamb."

This paper saw some humor, however, in this new "oatmeal dust explosion" theory, intimating that if it was found that "oatmeal" was explosive, then a good many mysterious disappearances might be accounted for. It referred to the disappearance of an Ohio town treasurer as follows: "He was last seen on his way to the village through an open field, soon after breakfast. It was supposed that he took the cars at another station and has fled to Canada. The words 'soon after breakfast' may be full of significance, and the suspicion of the honesty of the man may be cruelly unjust. Everyone in Ohio eats oatmeal for breakfast and it is among the possibilities that this town treasurer exploded on his way to town and that he did not go to Canada, excepting, perhaps, a few pieces of him."

Theory of Dust Explosions

By accepting the theory that dust explosions are similar to gas explosions we can get a better understanding of the problem. Dusts have definite ignition temperature, just as gases do, and they also have what might be termed upper and lower limits of concentration. For instance, methane gas (ordinary mine gas) to be explosive requires a mixture of 5.5 per cent gas and 94.5 per cent air. When the mixture contains approximately 10 per cent of this gas and 90 per cent of air the explosion is the most violent. When the gas is increased to about 15 per cent with 85 per cent of air the mixture becomes non-explosive and cannot be ignited.

Some work has been done to determine the lower limit of concentration of various explosive dusts. It has been found that for corn starch for instance, that .007 oz. (seven one thousandths) of an ounce per cubic foot of air might be considered the lower explosive limit. In other words, about 7 ounces per thousand cubic feet of air space (a room 10 by 10 by 10) would form an explosive mixture.

Dust Ignition Sources

Since the ignition sources of explosive dusts are practically identical with those of explosive gases we can radily understand that anything which will ignite explosive gases will also ignite explosive dust clouds. These possible ignition sources include matches, open flames, electric sparks, fires and similar ignition sources. One of the principal factors in the explosibility of a dust appears to be the degree of fineness. It has, therefore, been difficult under certain conditions to determine when a fire stops and an explosion starts. The explosion appears to be nothing more than flame propagation through a very finely and uniformly divided dust cloud. This flame travels at a very rapid rate, building up considerable pressure which produces what we ordinarilly call the explosion.

Los Angeles Fire Department Team Turns Out for Football Practice

The trainer of the Los Angeles Fire Department football team believes that climbing ladders is excellent practice for the candidates. This is the same team that defeated the New York Fire Department team in a series of games in New York last year.

Dust Explosions During Fire Fighting

Although many explosions occur during the normal operation of the plant, there have been a number of disastrous explosions during fire fighting. In general these may be classified as follows:

1. Dust explosions that have taken place when firemen attempted to remove the contents of bins or other inclosures. These materials are usually in powdered form and can be readily ignited when they come in contact with a flame.
2. Explosions that have occurred after the fire started; in some instances, after the firemen have been fighting the fire for thirty minutes or more. The falling of the floor or the dropping of the bottom of bins forces the dust cloud on to the fire, and an explosion results.
3. Explosions that have been caused by a heavy stream of water striking a pile of powdered material in the plant. The water forces the dust on to the flames of the fire, and an explosion follows.
4. Another classification which is somewhat different from the three already referred to might be considered. Some explosions have taken place during fire fighting as the result of the chemical reaction between the water and the dust. In the application of water to hot aluminum powder, for example, free hydrogen gas is generated and causes an explosion. It would appear that when dusts of this character are present, the use of water in fighting fire is dangerous.

Other Explosive Substances

It is readily understood that dynamite or gasoline or processes in which inflammable oils are used constitute a serious danger to firemen. It must also be understood that other substances such as dusts or chemicals are just as hazardous and proper precautions must be adopted.

For several years workers in the United States Department of Agriculture have been searching for a fumigant suitable for use in the treatment of stored grain. On account of fire hazard, excessive cost, ineffectiveness, toxicity to man, or deleterious effect on grain, the fumigants in general use up to the present time have not been entirely satisfactory and the operators of grain elevators have had to resort to handling the grain in order to keep it in condition.

During the past year a method of using ethylene oxide in combination with carbon dioxide has been developed that appears to be admirably adapted for the fumigation of grain in elevator bins. There is no fire hazard when the fumigant is properly applied and the method of application is simple. In addition the fumigant has no harmful effects upon the milling and baking qualities of the grain, leaves no odor, is not expensive, can be handled without danger to the operator, and when properly applied is 100 per cent effective against the grain weevil even at winter temperatures.

Exposure Hazard

Firemen often have been exposed to dust explosion hazard while fighting fires in industrial plants in which explosive dusts are being handled. In fighting a fire of this character in the Middle West, eighteen firemen were caught in the explosion; four of them were killed and fourteen burned seriously. Upon investigation it was found that the fire had been in progress approximately thirty minutes and that when the floors under the storage bins dropped the dust cloud which was ignited by a flame exploded. A similar case occurred in a flour mill fire in one of the eastern states.

Two explosions have brought forcibly to the attention of those interested in dust explosion prevention work the need of training firemen or instructing them in the proper way of fighting fires where a dust explosion hazard exists. While fighting a fire in a wood-dust storage tank in an eastern wood-working plant, two firemen opened the tank to allow the dust to flow out. The dust was ignited by a flame in the tank and exploded, the firemen were enveloped by the flash and seriously burned. Four days later six firemen lost their lives and six others were severely burned while fighting a fire in a wood-working plant in the Middle West. After the fire in the dust bin had apparently been extinguished, the firemen opened the bottom of the bin and allowed the dust to run out on the floor, fifteen feet below. As it fell a dust cloud was formed, which was ignited by fire that had been

(*Continued on page* 909)

This Filling Station Fire Extended

Fire starting in the filling station at the end of the block spread through the entire triangular building, the second floor of which was used as an amusement hall. This fire occurred in New York City in February of last year.

Fires That Start with a Flash

Gasoline Filling Station Blazes Usually Represent a Total Loss—Fast Work Necessary If There Is to Be Any Salvage

GASOLINE filling stations have multiplied so rapidly in recent years, in practically every city in the country, that the problem of handling fires in them is one with which every fire department is faced. The advent of the palatial service station, built around the filling station idea, has multiplied the dangers of fire loss tremendously. But the average gasoline filling station represents a comparatively small investment and if fire should occur the loss is not apt to be great, though it should be total. But even with the small gasoline station fire, there is a right and wrong method of handling it.

Such fires may start from any one of a number of causes, but the most frequent seems to be from leaky equipment and careless smoking. Occasionally a tank on a car overflows, and if somebody is careless about tossing away burning matches, a flash-back and fire is the result. Back-fires from the automobiles are sometimes charged with fires in gasoline stations, but they seem to be comparatively few.

The small gasoline station employing permanent filling post and the portable equipment offers a bigger chance of fire than does the one employing only standard, permanently installed filling equipment. A car may bump into a portable tank, or back into it, and a flow of gasoline is the result.

Handling this type of fire is a simple matter if satisfactory apparatus is on hand. Assume gasoline is flowing from such a portable tank, which is usually mounted on wheels, the most effective extinguisher is one employing gas, or a combination of gas and dry powder. The carbon dioxide gas is very effective in that it can be applied to extinguish the fire right up to its source. Foam may not work in this case particularly on the portion of the fire between the leak in the tank and the ground.

On pools of gasoline which may be afire, the foam is, of course, as effective an extinguishing agent as there is available.

The same type of fire is encountered in the case of an automobile with a leaky gas tank or one which is overflowing. And similar conditions exist as in the case of the permanent gasoline pump which has sprung a leak through collision or other cause.

With concrete runways inclined away from the station building, there is little chance of fire communicating to this structure by flowing gasoline which is afire.

When the filling station itself takes fire water may be used with good effect. The quantity of oil within such a building is not large and as all gasoline tanks are placed under ground, there is little danger of serious explosion occurring.

Water is most effective in covering exposures, and wetting down burning materials of which the station is constructed. It is also effective in wetting down cars which may be afire.

Soda and acid extinguishers are of little use on burning gasoline, but they may serve in checking fires within the building itself.

Ideal equipment for the gasoline filling station would

include foam extinguishers, carbon dioxide gas extinguishers, or combination gas and dry powder extinguishers. Carbon tetrachloride is satisfactory for small fires, but in the size of extinguishers commonly supplied, it is not fully effective, particularly where flowing gasoline, which is afire, is encountered.

Sand boxes with shovels, or sawdust and soda, may serve very well in some cases, although the method of applying such materials to burning gasoline or oil is comparatively slow. It requires a very quick method and an efficient one in order to check the fire in its early stages.

The Gasoline Station Makes an Exposure Fire

At a spectacular oil field fire at Santa Fe Springs, California, the department had a job covering exposures including the gasoline station shown in the foreground. Although the station took fire several times, the prompt and effective use of streams kept it sufficiently protected to prevent its destruction.

Man Jailed for False Alarm

A fire alarm was received from Fire Alarm Station 76, located at Fifth and Wylie Avenues in the downtown business district of Pittsburgh, Pa., at 12:55 a.m. on July 26th. Upon arrival of the firemen, Captain Sol Kramer of Engine Company No. 3 found a man, giving his residence as Butler, Pa., near the fire box. Upon questioning, he admitted that he had pulled the fire box after being robbed by a man that was with him, who, he said, told him to pull the box. Later he admitted to the firemen that the above statement was not true. The man was placed under arrest and sent to Central Police Station.

At a hearing before a police magistrate, the prisoner would not state who the man was that was with him at the time the false alarm was sounded.

Magistrate Rothenberg held him for court on a charge of maliciously sending in a false alarm of fire.

At a hearing later in Criminal Court, held before Judge Rowan, the prisoner was sentenced to pay a fine of $100, as well as the court costs and to serve six months in the Allegheny County Work House, under the act of 1895.

Judge Rowan, in passing sentence, stated to the Fire Department officials present at the hearing in Judge Rowan's Court, that he would be glad to cooperate with the Fire Department officials in any way possible in stamping out the dangerous practice of sending in false alarms of fire.

Heretofore, in almost every case where an arrest was made for sending in a false alarm of fire, the offender was given a light fine or a lecture and discharged by the police magistrate.

WM. E. PATTERSON.

New Apparatus for Tucson, Ariz.—New equipment has been purchased for the Northside station of Tucson, Ariz. It is expected that the equipment will be delivered the latter part of this month.

CHIEF JOHN KENLON TALKS AT OPENING OF N. Y. FIRE COLLEGE

Stresses Importance of Officers Being Able to Command Respect of Subordinates—Course Outlined by Assistant Chief T. F. Dougherty

By WM. JEROME DALY

THE 1930 Fall session of the New York Fire College opened on October 1 with Chief John Kenlon on the rostrum. Twenty-five of the recently promoted lieutenants attended and will continue to attend the eighteen periods of the term which will end on December 13.

Chief Kenlon said in part:

"I deeply appreciate the role that a commanding officer has in the organization, the discipline and efficiency of a fire company. It has been said hundreds and hundreds of times that a fire company reflects the character of its commanding officer. The company commander teaches and carries out tactics. Tactics are essential in training firemen and in training yourselves. Take, for instance, the use of streams—I have seen streams directed at one spot for fifteen minutes—kept in the same position; now how much fire do you suppose you can extinguish that way? You are simply flooding the building with tons of water for no good purpose at all.

"Remember that eighty-eight per cent of the fires are extinguished with one stream of water and of this number seventy-five per cent could be extinguished with a half-inch tip; it is just Hell to get some men to use a half-inch tip. One and a quarter inch nozzles in a bedroom fire—nonsense! The man on the nozzle usually opens the pipe all the way. You should emphasize care in handling streams; take an interest in your work; study out your own problems.

"Judgment and intelligence in handling deck pipes, outside pipes and wagon streams, should also be exercised. The company officer should be close to his men on the pipe; obtain a maximum of distribution, move the stream along. This equally applies to water tower streams.

"Now, I want to impress on you the value of discipline around quarters and at fires. I have a keen eye and I see a whole lot more than I am credited with seeing. I see a lot as I go along. While abroad this summer I was in a farming country and I saw weeds growing on farms where the farmers, even though they worked hard, nevertheless had a lot of weeds. We have some weeds in the Fire Department. We get in some cocky and conceited men of superior complex who start right in to regulate and run a fire company. Unfortunately there are some fire officers who permit this because they have no 'guts,' as the saying goes.

"This sort of fellow must be taken in hand at once and taught that discipline and obedience of orders is the first order of things. I know of some officers who just about slide along; maybe they are weak men, just depending on others to carry them on, consequently there is no discipline or order. They have no attributes as commanders; they never regain respect of their subordinates.

"Begin with yourselves. You know your duties; you must first set the example yourselves. Be on time; be in uniform; be a man that other men will have to respect whether they want to or not and unless you respect yourself, you will not find others who will respect you. You are here to improve yourselves and to improve your condition in life for your own benefit, as well as for the benefit of the people of the City of New York. The man who wears the uniform of the New York Fire Department should be a gentleman at all times. No loafer, no grafter, no coward, no thief will ever wear that uniform, if I can stop him.

"Take pride in your uniform and remember that few indeed out of the many thousands of men in this city are privileged to wear it. Never cast any reflection or stain on the uniform by any act of yours."

Chief Kenlon said that he will expect the class to later write a report on a subject to be determined and that he will examine all the papers. He said the report might be one which will embrace new ideas or suggestions or recommendations. "I have great respect for the young mind; I am still young enough to take up and grasp new ideas."

Assistant Chief Thomas F. Dougherty, Dean of the Fire College Faculty, recited the curriculum for the session and laid down other regulations.

Deputy Chief John J. McElligott opened the first lecture with "Marine and Waterfront Fires."

The other members of the faculty are Deputy Chief John Davin, Deputy Chief Henry B. Helm, Battalion Chief Charles W. Rankin, Deputy Chief John J. T. Waldron, Deputy Chief Richard J. Marshall, Deputy Chief George L. McKenna, Dr. Harry M. Archer, Fire Prevention Inspector Peter Maher and Combustibles Inspector Leo Liebermann.

Newly Elected Chief at Fort Lee—Edwin D. New, of Fort Lee, N. J., was elected chief of the volunteer Fire Department.

Fire Station Site to be Purchased at Alhambra—Bids have been asked for the purchase of a site for the fire station to be erected in the vicinity of Valley Boulevard and Fremont Avenue. The city appropriated $40,000 in June for the erection of a new fire station and at the present time a suitable site is being sought.

The Short Fire College—How It Works for Good in Fire Fighting

Well Known Fire Fan of Detroit Gives Some Interesting Views on the Subject—Is Enthusiastic as to What Can Be Accomplished

By PAXTON MENDELSSOHN, Detroit, Mich.

THE article which follows is particularly significant in that the author is not only a well-known fire fan of the city of Detroit and Chief of Box 12 Associates, but that his interest in the matter of the fire college was so great that he went through the four-day short course conducted under the auspices of the Michigan State Firemen's Association at South Haven in that state on July 7 to 10 this year. What he says, therefore, is from first-hand information:

Paxton Mendelssohn

Within the last few years any one who has taken an interest in Fire Department affairs has become aware that the business of fire fighting is on a higher plane than in the olden days. Beef and brawn alone no longer mean a good fireman, and college graduates in our larger departments are not uncommon. Intelligence and self-thinking are now requirements. Evolution team work is recognized, and although certain physical requirements naturally are still maintained, firemen of today must have considerably more attributes than just stature and muscle.

Fire authorities all over the country have recognized these facts and whether it be fire prevention, the inspection of buildings, or the art of putting out fires, intelligent handling of any situation by accepted standards has been found so valuable that wherever one casts his attention we find classes of instruction being conducted.

Cities of sufficient size have established schools in both fire prevention and fire extinguishment, and State and National Associations, recognizing the same conditions for the smaller communities have established courses of instruction, many of which are sponsored by the association itself, but conducted by the State university.

Fireman of Today on Higher Plane

The fireman of today has placed his profession on a higher plane. He is a different man from the old school fireman, and the development of fire prevention and fire extinguishment is progressing on an upward course, not alone for the benefit of the tax-payer but for the fireman himself.

Let me digress a minute and talk about myself. I am not a fireman by profession, because circumstances of life started me along different lines in a pursuit for livelihood. However, for years I have had an ardent interest in the art of preventing and extinguishing fires and the saving of human life. I have always wanted to be a fireman, but now I am too old to join any paid department and the city in which I happen to live has a large, modern, paid department and I cannot even have the joys of being a volunteer. Therefore, I must relegate myself to the bystander class. Some call me a sidewalk chief, most generally I am termed a fire fan. Be that as it may, I have not yet been able to discover any extinguishing agent that can quench the burning desire I have always had to interest myself in preventing and extinguishing fire.

Many Things Learned From Short Course

Having for years taken this deep interest in the profession but never having actually been a part of it, I nevertheless decided I wanted to know more about this development of teaching fire prevention and fire fighting. I, therefore, this summer decided to take one of these short courses myself and find out what it was all about, and I learned so many things that I have been unable to refrain from telling about them.

Of course, I learned a great many practical things relative to the actual handling of equipment, the best method to employ, how to work out company evolutions, etc. I saw salvage operation. Learned all about first aid and resuscitation, and discovered that many of the things required of a fireman could well be taught the average citizen and to everyone's advantage. However, all of these things in a sense were minor to some things I learned, which I want to chiefly mention.

Short School Opportunity for Small Town Fireman to Learn

Again I must digress a little. It is my opinion that many members of the larger fire departments may have the idea that they are better firemen than their brothers from the small community or the volunteer department. I admit that in experience and training, that is the case, but I am still of the opinion that the fireman from the small town, although he may lack in actual experience, does not in any way lag in the desire to learn, the desire to be an efficient fireman from all standpoints. his only handicap having been his inability in the past to get the actual experience in the small community, and not being able to get the information in some other way. The fire college and school of instruction now being made available to him, is giving him this opportunity that I am sure he has desired for a long time.

Small Town Men Good Students

In observing the conduct of the delegates and members of the classes, I noticed that the pupils from the volunteer and small town paid fire departments were most attentive at the lectures, exceedingly eager to ask and answer questions, and were the first to step forward when volunteers were called for to carry out some evolution on which instruction had been previously given. I also found that the fireman who has lacked the experience through no fault of

"My conclusions are that the fire college is a necessity, and is bound to stay. If it is properly conducted with the right kind of instructors and the proper attitude from the pupils, a great good is being, and will continue to be, accomplished in behalf of fire prevention and fire fighting to the advancement of the fireman himself as well as for the benefit of the citizen and taxpayer whom he serves."

his own, was not ashamed to admit his position, and having admitted his lack of experience and knowledge, was most eager to get his instruction from his brother from the larger city who had his department school of instruction and who, further, being from a large town had more opportunity for actual experience than his brother of the small city, upon whom calls for service were far less frequent.

In making the above observations I do not want to in any way insinuate that I am showing preference for, or giving credit to a greater extent for attributes of, the small town fireman over those of his experienced brother of the large department, but the observations I have made in watching the students at the course I attended brought out this condition which I wish to call to your attention. The fact that I may have observed these things, comes from the fact that by very nature of his opportunities and experience, the pupil from the larger city did not necessarily have to appear so much in the limelight as the pupil from the small department, who really wanted and needed the instruction.

Excellent Quality of Instructors

Another condition came to my attention which I believe worthy of mention, that is, the method of instruction and the way the instructors handled themselves. I bring this up because it is natural to assume that the instructors at a fire college must necessarily be drawn from the instructors of the large Fire Department schools or from the ranks of professional fire instructors now being maintained on the staffs of many organizations, such as Inspection Bureaus, and others of a similar nature. These instructors of course not alone come from the large city and have back of them much knowledge and experience, but many of them travel about the country and are more or less men about town, as one might call them. It is so easy for instructors of this type to take the attitude that, having had the knowledge and experience, and coming from the large communities, they could show off a bit. Even if not intentionally doing so, it is so easy to fall into this habit, and a habit of this kind when exploited upon those pupils of smaller departments could easily cause a bit of feeling and much antagonism, and ruin the benefit of the instruction.

What the Short Course Can Accomplish

However, I am glad to say the school I attended was free from such conditions. The instructors, all of them in the class above mentioned, showed no attempt of undue display of authority or superiority. They conducted themselves on the principle that they had been selected to instruct those who were not as fortunate as they were, and endeavored in simple language and a courteous manner to show the pupils, some of whom were as high in the rank as chief, how to go about the business of fire prevention, fire fighting, and its associated requirements, in the most accepted and standard manner and with the most modern and useful tools.

If fire courses can be conducted in this manner and with this attitude prevailing, they will not only accomplish a higher state of efficiency in all fire departments, but also a friendlier feeling and a closer uniting of the large and small communities. This should be so, because there is hardly a small town that among its buildings, its factory or two, or its lumber yard that does not present the same conditions which confront the large town fire department. The small town needs the knowledge and instruction even more than the large city, because the fireman of the large city more or less is concerned with fires at very frequent intervals, but the small town fireman, who has infrequent fires, may at any minute be called upon to combat the same condition in his small community that his large city brother is confronted with.

Believes the Fire College a Necessity

My conclusions are that the fire college is a necessity, and is bound to stay. If it is properly conducted with the right kind of instructors and the proper attitude from the pupils, a great good is being, and will continue to be, accomplished in behalf of fire prevention and fire fighting to the advancement of the fireman himself, in placing his work more and more on the scale of a profession, and as well for the benefit of the citizen and tax-payer whom he serves by rendering them still more efficient protection.

Four Persons Killed by Still Explosion in Toledo

A 500-gallon liquor still exploded in Toledo, Ohio, and four lives were lost. Four men who apparently had been working there were found amid the wreckage of the giant copper vat. The photograph shows firemen still working to extinguish the fire. It also indicates the intensity of the blaze.

New England Forest Fires Increasing

Forest fires have been particularly destructive in New England this year, according to a statement made by the Department of Agriculture. The report states:

Forest fires were more destructive in Connecticut this year than at any other time since 1922, according to State forestry reports, which show that of 27 fires devastating 1,000 acres or more in the last nine years, eight have taken place this year.

In 1922, 12 fires swept 26,000 acres in Connecticut. This year, 18,000 acres of forest were destroyed by the eight large fires. The fires, crossing the boundaries, burned even greater aggregate acreage in the three surrounding States of New York, Rhole Island, and Massachusetts.

It is noteworthy that in nine years all these big fires started in midspring. Twenty-two of the 27 occurred between April 24 and May 3. Six of this year's big fires started Sunday, May 4. The high hazard period this year lasted from April 28 to May 7, with continual fires, abnormally low humidity and high winds.

New England States have suffered severely from forest fires this season. One destructive fire broke out in Nashua, N. H., and spread into the forest. Another started when a passenger airplane crashed into a tree.

Last year there were 3,952 forest fires reported in New England and New York. Of these, 1,410, or over 35 per cent, were attributed to smokers and 548, or nearly 14 per cent, to burners of debris. The area burned over in protected districts, which cover practically all the forest areas, totaled 64,430 acres. Complete reports have not been received for the current season.

Chief Kenlon on "Light Duty"

Fire Chief John Kenlon, of New York City, is on "light duty" in obedience to the advice and counsel of Dr. Joseph E. Smith, Chief Medical Officer of the department. This decision was reached when Chief Kenlon submitted himself for examination upon his return from a recent vacation in Ireland. The chief is directing the administration of the uniformed force from his desk. For the time being he is not going to fires, leaving the field work to Assistant Chief Thomas F. Dougherty and Deputy Chief John J. McElligott, who are alternating daily.

Chief Kenlon is optimistic that his condition will improve sufficiently to permit him to return to active duty. His family and his physicians are apprehensive, however, lest the rigors of fire duty might retard his progress in health. For the present the Chief said he has no idea of retiring.

WM. JEROME DALY.

Survey Being Made of Ventura—The Board of Fire Underwriters of the Pacific is making a fire survey of Ventura, Cal.

R. E. Thurston, Chief of Putnam, Conn., Dead—Ralph E. Thurston, chief of the Putnam, Conn., fire department, died in the Truesdell Hospital in Fall River, Mass., at the age of fifty-three. He was a graduate of the Massachusetts Institute of Technology and came to Putnam twenty-four years ago. He was a thirty-second degree Mason and a Past Exalted Ruler of the Elks.

THE ROUND TABLE

For Practical Discussion of Current Fire Department and Fire Management Problems

ALL the hose, axes, extinguishers, ladders and other equipment carried on fire apparatus are of no avail unless they can be transported to the point where needed in the least possible time.

Since such equipment is moved to the fire by means of motorized fire apparatus, it is necessary to pay some attention to the condition of the motor. There must be some assurance that the automotive unit will function properly when called upon to do so. Unlike pleasure or commercial cars, it is not considered pardonable for fire apparatus to stall while on the way to answer a fire alarm.

As some guarantee that the motor is in proper operating condition and also in order to discover mechanical defects, if any, many departments make it a practice to run the motor in the fire station for a few minutes. It also serves as a check out for the outgoing platoon and is of value to the incoming platoon.

The question in full that is treated in this issue appears in the box on this page. In the box on the following page is the problem that will be discussed in the next issue. Should you have some comments that you would like to make on the next question, you are invited to write to the "Round Table Editor," FIRE ENGINEERING, 24 West 40th St., New York, N. Y.

HERE IS THE PROBLEM

Is it a good plan to run apparatus motors in fire houses as a test that the apparatus is in proper operating condition?

How often do you believe that the engines should be so operated?

What has been your experience in this work?

Discussion of the Question

Unlike some of the problems that have been discussed in this department, there appears to be large numbers favoring the pro and con of the question. The replies received are very interesting.

Chas. E. Fortin, Chief Lewiston, Maine: I believe it is a very good plan to start all motors on fire apparatus for the following reasons: It shows that the motor was checked, and also helps in proving whether or not trouble or defects were noticed, reported, and repaired immediately. It gives the master mechanic a chance to visit the different stations to listen in and see how the chauffeurs start, run, and stop their motors, which is a very important factor with present day motors.

Motors on all fire apparatus should be started and operated for at least three minutes once a day. The reason we run our motors three or more minutes is to make sure that all excess or heavy gas, taken in through the carburetor during the operation of choking, has been completely burned out of the motor before it is stopped.

My experience in this field has been limited to that of a small city fire department. In Lewiston we start all our motors at 6 p.m. One man uses the crank in order to help start the machine while the operator steps on the starter. In doing this the man operating the crank assists in helping the starter to turn over easier. We have very few fire calls and if our motors were not operated at least once a day, there would be no way of knowing whether or not the apparatus would start when the next fire call was received. Some people would say that it "spoils or runs down the battery." However, it must be remembered that batteries are cheaper than an idle motor in the time of need.

We appoint one man to test and charge all apparatus batteries from a central charging outfit which has outlets in each room or space where the apparatus stands. Batteries are charged without removing them from the machine. We have never experinced any difficulty as yet with this system, and we know at 6 p.m. every evening that the machines are in working order.

R. A. Bogan, Chief Baton Rouge, La.: It is a good practice to run an engine in the fire house. It has been our rule to run them at 8 o'clock in the morning when the men come on duty. This enables us to ascertain whether or not the apparatus is in good working condition in the event of a call being received. This same operation is also required of the night shift at 6 p.m. Often we find a bulb burnt out, and light is certainly necessary in travelling, or some other minor trouble that can be corrected at once. I think an engine should be run a short distance to try it out for other mechanical troubles that might have occurred.

In general, I think it is good practice for a department to know if their engines are capable of operating to their full capacity at a fire. Often a valve is stuck, or a spark plug is missing. If this trouble can be corrected on the apparatus floor by examining and running the equipment, it is certainly worth while as trouble is thereby avoided at fires.

Thomas J. McCarrick, Chief, Revere, Mass.: I question very much the wisdom of so-called daily motor tests, even though it has been a practice in this department for a great many years. With the inception of motor fire apparatus, such a policy was undoubtedly necessary, but today with the mechanical perfection of our standard apparatus, I am inclined to believe that such tests are a detriment rather than a benefit, particularly in busy companies. Still the old theory seems to prevail that the oncoming operator must be assured that the apparatus is in good mechanical order when he reports for duty. This theory may be sound but from a practical viewpoint I question it.

Our department is still operating under the following rule, with the exception of the 7:55 a.m. test which has been discontinued: "Motor apparatus shall be started at 7.55 a.m. and 5:55 p.m. and run for one minute and if equipped with a self starter the hand crank should be used on these occasions. Racing the motor is strictly forbidden. Commanding officers shall announce the condition of the motor if not running properly."

My experience has been that if apparatus is regularly inspected and necessary adjustments made by a competent mechanic, the daily test is hardly necssary in fairly busy companies. I can recall a few instances when apparatus functioned perfectly during the motor test and an hour

or two later on an alarm starting was found difficult.

John T. Oliver, Chief, Marblehead, Mass.: Fire apparatus should be started and run every morning and night. This has been our practice. The outgoing shift starts the motors at 8 a.m. and the oncoming shift shuts them off. In this way we know that they are ready for use. At 6 p.m. the same operation is performed, the apparatus thereby being started twice daily, and run for five minutes. When trouble is found the mechanic makes the necessary repairs at once.

Samuel J. Jeffries, Chief, Wilkinsburg, Pa.: Our department is operated under the two-platoon system. At roll call at 8 a.m. every morning the chauffeurs coming on duty start the motors. This is the only time the apparatus is started except when a fire call is received. We find by turning the motors over at 8 a.m. we are able to make any necessary adjustments. At one time we had the motors turned over at 9 p.m., and on one occasion were caught. Since that time they have only been started in the morning.

R. C. Robertson, Chief, North Attleborough, Mass.: We believe it a very good plan to run apparatus in station houses, as a guarantee that apparatus is in proper operating condition. Our motors are started every morning the first thing, they are idled down and properly warmed up and the oil is checked. We then run them fifteen to twenty minutes and if we find anything wrong it is immediately taken care of. We have observed that where apparatus has not been started regularly, dead batteries or similar mechanical trouble has often caused a delay.

Frank Charlesworth, Chief, Providence, R. I.: Engines should be operated in fire houses. When so started, the pet cock may be opened up to see that the spark plugs are all firing properly. The ammeter may be looked at to see that it shows charge, also the gauge to see that the oil pump is working properly. These parts could not be checked if the motor were not started. Our engines are started once a day or more, according to conditions. If a company averages fifteen runs a month, once a day is sufficient. If the company does not average this many calls, the motor should be started twice daily.

Experience has shown that companies returning from fires between 8:00 and 8:30 p.m. and shutting off the motor have seemingly left it in good working order. However at 8:30 p.m. when the test blow strikes, the motor fails to start. The officer in charge calls the repair department and they have found that the battery terminals had been jarred loose on previous runs. We have also found that upon trying to crank apparatus by hand that the key has fallen out of the starting clutch on the end of the crankshaft.

Dale Earlywine, Chief, Pratt, Kansas: I do not consider it good judgment to run motors every little while to see if they are working. The first few minutes a motor is run is harder on it than the next hour's run when it is warmed up. Therefore I can see no reason for starting them every so often, thereby wearing them out. If your motor is in good shape now it will start a week later just the same as it would at that time. To my mind once in ten days is enough to check over the apparatus for defects.

J. M. Slaughter, Chief, Paducah, Ky.: I do not believe it is good policy to run engines in fire houses as there is no assurance that they will start or function properly on the following start. Another reason for making this statement is that spark plugs are liable to give trouble if the engine is started and run idle too often. Engines should not be started for such purpose more than twice a week. In most cases there are enough fire runs to take care of this starting. In this department we haven't been carrying out the policy of starting engines in the station for the past five years and the result has been that we have had less spark plug trouble, better engine oil, etc.

D. M. Hudson, Chief, Chelsea, Mass.: The early entrance of motor apparatus into fire extinguishment brought notions of a functional necessity of running engines at frequent periods to guarantee readiness for immediate response to alarms of fire. Morning, noon and night engines were run in accordance with this conception of being prepared for efficient service. The scientific advance in the elimination of mechanical weaknesses in the construction of apparatus, and the fuller knowledge of the better arrangement of parts in simplifying its operation, make the frequent running of the engine unnecessary. No matter how often an engine is started it will sometimes balk. But the better condition of the motors of today assures a reliability consistent with permanence of operation that was always unknown upon their first introduction to the fire service.

Last year this department responded to 888 calls which gave us a sufficient number of times in which the motors were run without wasting gasoline between alarms.

A. E. Anderson, Chief, Bethlehem, Pa.: My experience with the daily running of engines in fire houses has been that in the majority of cases you do more harm than good. When an engine is first started and run while cold, only the lighter portion of the gas vaporizes and forms an explosive mixture. The heavier parts go into the cylinders, thinning out the oil film on the cylinder walls and finally draining into the crank case and diluting the oil there. Such dilution promotes wear because the lubricating value of the oil is considerably reduced. House running is supposed to be a guarantee that the apparatus is always ready to start. But is it? How can we be certain that when the engine is shut off that a connection did not break or that some small but vital part did not fail. In our department we test the apparatus once a week if it has not been out of the station.

W. F. Hammer, Chief, Belton, Texas: Engines should be started once a day. However, this is not a guarantee that the apparatus will be in perfect condition when it is to be started again. Starting the engine once a day only gives you an idea of how the apparatus is working. Also it enables you to be able to report that the engine had been started, should a delay ever occur due to failure of the apparatus to start when answering a call.

H. A. Zeller, Chief, Sayre, Pa.: Our engines are started once a day. We have no battery charger and find the battery the poorest unit. For this reason the engine is turned over every evening to keep the battery well charged. Also during this test we have discoverd broken valve springs, and other minor defects.

John T. Sullivan, Chief, El Paso, Texas: Starting engines in stations to my mind is not a good policy. However, in this department the motors are started twice daily, at 8 a.m. and 4 p.m. I certainly believe this is a discussion well worth while as I have been trying to figure out some way to eliminate this unpleasant condition. I have found that while the men use every ventilating precaution to eliminate monoxide gas or odors, this gas and accompanying nuisances are somewhat dangerous and very unpleasant, particularly in smaller fire stations.

M. M. Tawney, Chief, Harrisburg, Pa.: We start our engines morning and evening at the change of shifts. There was a time when we experienced a great deal of motor trouble. Upon taking charge of the department four years ago, an order was immediately issued that all motors should be run every day, at least once, and twice in the winter. This order was issued with the idea of properly lubricating and keeping the motor in good condition. The mechanic reports at the present

(*Continued on page* 900)

HERE IS THE PROBLEM FOR THE NEXT ISSUE

How long should pneumatic tires be on fire apparatus before they are changed?

What records do you keep of pneumatic tires?

What use do you make of tires too old or worn for fire service?

With the Editor

Making the Punishment Fit the Crime

Many of the brush and forest fires, which have caused such great damage recently can be attributed to carelessness and indifference on the part of citizens. The habit of young people parking cars in densely wooded sections and throwing unextinguished matches, cigars and cigarets among the tinder-dry under-brush or of passing automobilists doing the same thing, is probably more responsible for the great fire loss in forest land than any other cause.

This act, so often repeated in spite of warnings and signs, is becoming so prevalent that a severe example made of some of the offenders through a jail sentence would undoubtedly have a salutary effect upon those responsible. Without doubt, the majority of those who are guilty of this carelessness have no criminal intent in their deeds—in fact would hotly resent a charge that such is the case. But this fact by no means relieves them of their responsibility for the burning of the valuable timber land through carelessness.

It may seem somewhat drastic to impose jail sentences upon persons guilty of setting fire to brush land through thoughtless acts on their part. But it must be remembered that such people are potentially as guilty as the automobilist who causes damage to property and danger to life and limb by careless driving and who, in case of accident from this cause, is liable to punishment therefor. The individual guilty of damage or injury through fire should, in fact, be more liable to drastic action than the reckless driver, as the damage he inflicts is much more general and severe.

We are gradually approaching the attitude of many of the European countries that a person who has a fire, unless he can prove lack of carelessness on his part, is guilty of any damage accruing to the property of others. This principle applied to the setter of a forest fire, which may easily result in the burning of adjacent residences or even entire villages, with possible loss of life, would certainly justify a severe penalty. It is a matter of causing the punishment to fit the crime.

Backing Up the Chief

A Chief of the Fire Department who does not enjoy the backing of his municipal government stands in rather an unfortunate position. Not only are his hands badly tied in the matter of improvements to the service, but he will find himself to a very large extent handicapped in the administering the affairs of his department. Not only should he demand—he should freely receive the support of his superiors.

This is not—or at least should not be—a matter of politics or favoritism. In fact, where such things enter into the Fire Department, there is pretty certain to result inefficiency and lack of coordination.

As a general rule, the Chief who has the backbone to stand up for his position and the protection of his department against all influences that will tend to lower or destroy the tone of its discipline or efficiency as a fire-fighting unit, will be the one who holds his job the longest. He will receive ever increasing respect not only from his men and the government for which he works, but also from the general public.

This latter subtle thing—public respect—may not manifest itself until such time as when a sinister influence makes itself manifest in an attempt to supplant the Chief for some political favorite. Then public opinion is very apt to assert itself in no mistaken terms and cause a hasty retreat of the forces arrayed against the Chief of the Fire Department and the efficiency in the fire forces.

A Chief that can feel he has this power behind him need apprehend very little from the effects of sinister influences working against him and his department.

Unconsidered Fire Losses

The Chief of the Fire Department in this modern time has an added responsibility in his work of "fighting fires before they occur." In considering the matter of fire prevention and the education of the people in fire carefulness, he can do much in stressing the fire losses that are not considered. There are often, in commercial fires of more or less heavy damage, elements which do not at once appear on the surface in computing the losses, but, which, nevertheless, are a very vital part—and sometimes even the greater part—of the total loss.

These may be termed "hidden losses" for want of a better name. They may be placed under various classifications: Loss of Trade; Loss of Time; Loss of Work; Loss of Credit; Continuance of Overhead Expenses while the Income has Ceased; Dissipation of Reserve Capital by the Necessity to Recoup the Fire Losses through the Use of Money in Quick Rebuilding, and so on.

Perhaps one of the most subtle, and at the same time, most real and serious embarrassments suffered by a going business of small capital is the loss or curtailment of credit which a large fire is apt to cause, especially if the insurance fails to amply cover the loss. There is likely to follow an uncertainty in feeling as to the solvency of such a concern, which inevitably will have a disquieting result on its credit.

Mighty few concerns have made money through honest fires. Even those houses which seek to capitalize

their misfortune through advertising rarely are sufficiently compensated to cover the loss of time and dollars caused by the fire.

The Chief, as an expert in all matters pertaining to fire prevention as well as fire fighting, can well stress this important feature of loss so often lost sight of. The consideration of so vital a matter as reduction of credit through fire loss, in addition to the actual damage from a blaze, may well cause a thinking manufacturer to redouble his efforts to prevent fires in his establishment and to see that his employees observe all of the needed precautions to avoid such a catastrophe. If the Chief can turn the business men's thoughts in this direction, he will earn the respect and gratitude of all whom he has so influenced.

Former Fire Chief Dies on Desert

C. T. Vail, seventy years old, and formerly Chief of the Salt Lake City Fire Department from 1908 to 1910, perished in an unusual accident on the desert near Yuma, Ariz.

He had left Yuma in an automobile intending to go to either Los Angeles or Salt Lake City. The car broke down twenty miles north of Ogilby and Mr. Vail walked twelve miles to a ranch where he obtained food and water, and he was given directions on how to reach town.

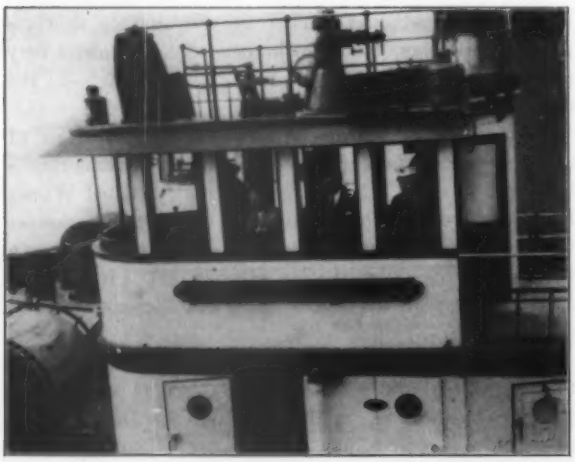
Ten days later a ranch hand found a package which had been given to Mr. Vail. A search followed and then the body was found three miles from the ranch house.

A married daughter is said to be the only survivor.

Chief "Smoky Joe" Martin to Retire

Following a conference with Fire Commissioner John J. Dorman of the New York Fire Department, Assistant Chief Joseph B. Martin made application for retirement effective November 1 at a pension of $5,500 a year. At present he is receiving a salary of $8,300.

Second in command of the New York Fire Department, Chief "Smoky Joe" could not pass the department's medical board examination for continued active service. Before the conference Chief Martin continued to refute reports that he would retire.



New York City Tests Radio on Fire Boat

Officers of the New York Fire Department and representatives of the Western Electric Company and Bell Laboratories conducted a test of radio fire apparatus on the fire boat "John Purroy Mitchel." Communication was established between the boat, Station WRBE and the land station WCF in the quarters of Deputy Chief John C. McElligott of the Marine Division. Looking out of the fire boat windows are, left to right, Chief John Kenlon, Fire Commissioner John J. Dorman and Deputy Chief John J. McElligott.

Bridgeport Stages Public Demonstration

Members of the Bridgeport, Conn., Fire Department participated in a review and inspection, and then demonstrated oil fire-fighting on the afternoon of September 24, before one of the largest crowds ever to attend an event of this kind in the spacious Seaside Park. It was the first municipal parade in which both fire and police took part since

A Part of the Bridgeport Department on Parade

1920. So pleased was Mayor E. T. Buckingham with the event that he announced after the exhibition that he would favor a similar program each year.

The program of the day began with the inspection of the thirteen fire stations by the Board of Fire Commissioners and several city officials. All houses were found to be in spick and span condition by the visitors. The parade began at 2 o'clock from Main Street and North Washington Avenue and covered a distance of three miles to Seaside Park. Automobiles filled with people parked closely together along the entire line of march. Thousands of others, largely school children who had been dismissed from classes at 1 o'clock on account of the program stood at the street curbs.

About 175 firemen, all members of the off-platoon were in the line of march. About 200 policemen were also in line. Following the two platoons of firemen was the old Pacific Engine Company of volunteer days, its members in their picturesque red shirts. An old horse-drawn steam pumping engine was followed by an American and British steamer, the first auto pumping engine, in service since 1914. The latest pumper purchased by the city of Bridgeport, a 1,000-gallon Mack, came next and was followed by old No. 1 Chemical, built in 1908 and now out of service. Two new chemicals recently built by the members of the Department of Machinery, the first to be installed with cabs, were also in line.

The oil fire demonstration was pronounced a real success when a pit filled with ninety gallons of gasoline and several gallons of oil was ignited and extinguished in exactly forty seconds. The flames and smoke billowed high in the air, throwing heat several hundred feet, but when the foam stream was played on it quick work was made of the blaze.

THOMAS F. MAGNER.

Firemen Stage "Appreciation Hour"

A special program was arranged by the Nashville, Tenn., fire department and broadcast from Station WTNT as a mark of appreciation for cooperation on the part of the public. Residents of the city contributed to a fund that was started to equip each of the fifteen fire stations with radio sets. The special radio program arranged was known as the Nashville Firemen's Appreciation Hour.

Port Angeles to Erect Fire Station—Port Angeles, Wash., has appropriated $32,000 for the construction of a new fire station.

Freeport, Me., Holds Open House—A new Chevrolet truck was delivered to the fire department of Freeport, Me.

State to Show Forest Fire Methods—Methods used in fighting forest fires will be demonstrated at twenty-two county and district fairs in Wisconsin.

Massachusetts Seeks Standardization—John W. Reth, state fire marshal of Massachusetts, has requested twelve municipalities to change all hose and hydrant fittings to conform to the National standard measurements.

Questions and Answers

NOTE—Readers are invited to send in questions, which will be answered in the order received. Names are omitted from questions unless otherwise specified

Danger of Fire From Automobile

To the Editor:

In connection with the state hospital in this town we have a large barn where a great number of cows are kept. The men who work at the farm have a habit of parking automobiles from 10 to 20 feet from the barn. As automobiles are subject to start fires, I have objected to parking so close to the building. The fire protection at the farm is very bad, no water, and only one 40-gallon chemical tank. What distance would you advise to have these cars parked in order to insure safety from fire to the barns?

S. T. G.

Answer: If there are a great number of cars, it would be necessary to have them parked sufficiently far from the barns so that in the event of their taking fire the farm buildings would not ignite through direct exposure. It is assumed that the barns are of the usual inflammable construction, and in this case cars in great number should not be parked less than 100 feet from the barns.

On the other hand, if but a few cars are so parked, and they can be quickly towed away in the event of fire, then there should be no great danger if the cars are kept from 30 to 40 feet from the barns.

In considering this problem, the danger of the cars becoming ignited is of first importance.

Some Pressure Calculations

To the Editor:

As a reader of FIRE ENGINEERING, I have benefitted much in keeping posted on new ideas in the science of fire fighting. I read the journal with great interest.

Will you kindly answer the following questions at your convenience in the columns thereof?

L. C. H.

Question 1. How do you find the number of gallons of water in a charged 50-ft. length of 2½-inch hose?

Question 2. How many gallons of water per minute will be delivered by a 1⅛-inch nozzle, at 40 pounds nozzle pressure? 2½-inch hose is used.

Does the length of hose have anything to do with the above problem?

Question 3. 700 feet of 2½-inch hose is stretched from an engine to a 1⅛-inch nozzle. Nozzle pressure is 40 pounds per square inch. 2½-inch hose is used. What is the friction loss, and the pressure at the pump?

Question 4. 400 feet of 2½-inch hose is stretched from a pumper to the street siamese connection of a standpipe in a six story building. Standpipe is 3-inch in diameter. 300 feet of 2½-inch hose is stretched from the standpipe outlet on the roof of the building, and equipped with a 1⅛-inch nozzle. 40 pounds pressure is wanted at the nozzle. What is the friction loss in the standpipe, and the back pressure in the standpipe? Also, what is the friction loss in the hose? What engine pressure is required to give 40 pounds at the nozzle?

Hydrant pressure is 85 pounds, 12-inch main with 8-inch plug, fitted with a 2½-inch outlet, provides the water supply.

Answer: 1. The volume of water in the hose may either be calculated directly in cubic feet or cubic inches, and then changed to gallons. In both cases the method of solving for the volume is similar. The cross-section area of the hose must first be found, and this area multiplied by the length of the line of hose to determine the volume.

But observe this precaution: if the volume is to be determined in cubic feet, the cross-section area of the hose must be calculated in square feet; if the volume of the hose is to be calculated in cubic inches, then the cross section of the hose must be calculated in square inches, and the length of hose must be taken in inches.

Solving the problem by the second method, the procedure would be as follows: Cross section area of hose = $2\frac{1}{2} \times 2\frac{1}{2} \times 0.7854 = 4.90875$ square inches. Length of hose is 50 feet, or 600 inches. Cubic contents of hose is then $60 \times 4.90875 = 2{,}945$ cubic inches. Now, one gallon of water contains 231 cubic inches. In the 50 foot section of 2½-inch hose there are 2,945 divided by 231, or 12.75 gallons.

Answer: 2. The formula for finding the discharge from a nozzle is as follows:

Discharge (in gallons per minute) = 30 x d x d x $\sqrt{P}$

Where "d" is the nozzle diameter in inches and "P" is the pressure in pounds per square inch.

= 30 x 1⅛ x 1⅛ x $\sqrt{40}$

= 30 x 1.125 x 1.125 x 6.33

= 240 gallons per minute approximately.

Where the nozzle pressure and nozzle diameter are given, the length of the line need not be considered.

Answer: 3. It is assumed that the line is laid horizontally.

Engine pressure is found by the following formula:

E. P. = N. P. x (1.1 + K x L)

Where "K" is a factor depending upon the diameters of hose and nozzle and "L" the number of 50-foot lengths of hose in the line.

"K" for 2½-inch hose with 1⅛ inch nozzle is .167.

"L" equals 700 ÷ 50 or 14.

Then E. P. = 40 x (1.1 + .167 x 14)

= 40 x (1.1 + 2.338)

= 40 x 3.438, or 137.52 pounds engine pressure.

Where a line is laid horizontally the engine pressure is made up of two factors: the friction loss in the hose and the nozzle pressure.

Then friction in the hose will be equal to the engine pressure minus the nozzle pressure or 137.52 minus 40 = 97.52 pounds.

(Note: While the above method of securing friction loss is substantially correct, some civil service examiners do not allow full credit for this method but insist that the friction loss formula be employed for calculating friction loss in hose lines. (This formula is as follows: Friction loss per 100 ft. of 2½-inch hose) = 2 x Q x Q plus Q, where "Q" is the flow measured in hundreds of gallons per minute.)

Answer: 4. The usual method of solving problems involving hose and standpipe layouts is to first consider the hose layout only, and then make allowance in engine pressure for back pressure and friction in standpipe.

In this particular layout an engine is pumping through 400 feet of 2½-inch hose to the street connection of a standpipe system. From the standpipe outlet on the six story building a 300 foot line of 2½-inch hose is laid, and connected to a 1⅛-inch nozzle. 40 pounds is desired at the nozzle.

First combine the two hose layouts, giving us 700 feet of 2½-inch hose, equipped with 1⅛-inch nozzle.

40 pounds is desired at the nozzle. Solve for engine pressure with this layout.

E. P. = N. P. x (1.1 + K x L).

The balance of this solution will be found in answer No. 3 above, wherein the engine pressure solves out to be 137.52 pounds. This pressure is sufficient only to overcome friction loss in the hose lines and give nozzle pressure of 40 pounds. It does not provide sufficient pressure to overcome friction loss and back pressure in standpipe.

The friction loss in the standpipe system is usually taken at 25 pounds.

The back pressure is: 12½ x 6 x .434 or 32.55 pounds. Then

corrected engine pressure equals 137.52 + 25 + 32.55 = 196.07 pounds.

The friction loss in the hose is, as shown in Answer No. 3, 97.52 pounds.

As no size of engine is specified in this problem, hydrant pressure size of main, size of plug, and size of outlet on hydrant are not needed in the calculations.

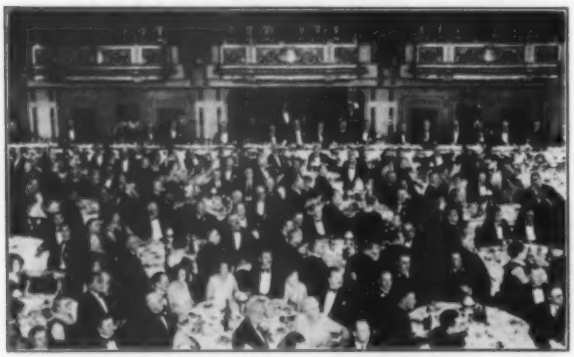
MANY PROMINENT OFFICIALS SPEAK AT N. Y. F. D. DINNER

Chief Kenlon in Talk Said No Firemen Ever Lost Life at Fire Which He Commanded—High Traditions of Fire Department Praised

By WILLIAM JEROME DALY

GOVERNOR FRANKLIN D. ROOSEVELT of New York was the principal speaker at the annual fire prevention dinner of the Commanding Officers of the New York Fire Department, held at the Hotel Astor on October 2. Fire Commissioner John J. Dorman was toastmaster at the dinner, attended by approximately one thousand persons. Each one received a beautiful souvenir menu in gold and blue that depicted all branches of the service.

The ballroom was decorated with the colors of the Fire Department and city flags. One end of the dais was ornamented with a fire alarm telegraph signal post which



Fire Prevention Dinner Held in Hotel Astor, New York City

flashed all alarms to keep the department officials informed of the movements of the fire fighting force.

Fire Commissioner Dorman delivered a short review of the history of the uniformed force since 1865. He said the commanding officers of the department were generals in the field in the war that never ends.

Governor Roosevelt greeted the assemblage with "fellow firemen," and revealed that he has been a volunteer since 1910 and a paid up member of the Eagle Engine Co. of Hyde Park, Duchess County, N. Y., and said, "but I have yet to attend a fire." He paid a high tribute to the volunteers of yesteryear, and emphasized that fire fighting today was not just a job, but a skilled trade. "There ought to be a college degree known as 'Doctor of Fire Fighting,'" he declared.

Joseph V. McKee, President of the Board of Aldermen, told of his admiration for the members of the Fire Department, and said that the history of the tradition of the New York Fire Department had never a breath of scandal attached to it. "The people of this city know what you are, they know of your courage, your fidelity and your honesty and they admire you all for it."

Wilbur E. Mallalieu, General Manager of the National Board of Fire Underwriters, paid a public tribute to the career of Fire Chief John Kenlon. He deplored the fire losses of the times and referred to Chief Kenlon as "always looking ahead, always with a new thought or idea—a dynamo of power not alone for the benefit of New York City but to the outside fire fighting world as well."

Willis H. Booth, President of the Merchants' Association, made a plea for more fire prevention and spoke in high praise of the personnel of the New York department. He said that fire prevention week should be fifty-two weeks of the year.

Chief Kenlon thanked the members of the uniformed force for their many kindnesses to him while he was ill last winter and spring. There was scarcely a day, he said, but that some kind expression or other came from some branch of the service—"evidence of loyalty and affection, which I shall always cherish. To-night I wish to proclaim to the families of my comrades my sincere thanks. It is splendid to serve the public well," the veteran commander declared as he complimented the commanding officers for their stewardship in the protection of life and property in the metropolis. "We are soldiers in a war that is always beginning. No brave man would tolerate a coward. In my forty-four years in the Fire Department and thirty years as an officer I never had occasion to charge any member of the uniformed force with cowardice."

"Never once in all the years that I have commanded the men of this department did a fireman lose his life under my command," said Chief Kenlon as the audience arose to its feet with loud applause.

"I know that you are always looking for a statement as to my future course at the head of the uniformed force, but I am going to disappoint you to-night."

Police Commissioner Edward P. Mulrooney closed the speechmaking with a fervent tribute to the uniformed force of the Fire Department.

During the dinner the Fire Department band played.

Arson Plot Frustrated in Pittsburgh

An attempt to set fire to the Friedman Brothers' jewelry store, occupying the first floor of the practically new eight-story store building located at 812 Penn Avenue, in the heart of the downtown business district of Pittsburgh, Pa., was frustrated when a porter, employed in a barber shop located in the basement of the building below the jewelry store, detected a strong odor of gasoline and gave the alarm.

The colored porter was cleaning up in the barber shop when he detected the strong odor of gasoline. Feeling suspicious that something might be wrong in the building, he notified the building superintendent, who in turn summoned firemen from the Eighth Street fire station to make an investigation.

Arriving at the jewelry store, which is protected by the Holmes Electric Protection Company, the Holmes Company was notified by telephone to send one of their patrolmen to open up the store for the firemen.

Upon entering the jewelry store, enough inflammable material was found in the set-up arranged to fire the building and probably cause loss of life.

The set-up, which was found in the rear of the storeroom, and hidden from view from the front street by a large partition which divided the main store room from the repair department, consisted of six pasteboard bottles and a one-gallon corrugated pasteboard container filled with gasoline, on top of which was piled waste paper, cardboard and wooden packing cases with lids removed. The interiors were filled with all kinds of inflammable articles. A number of the wooden packing cases were piled on top of one another against the partition and arranged like shelving. A work bench and shelving above were also piled with all kinds of pasteboard boxes and other inflammable material. In the center and on top of the set-up was found a burning candle, which evidently was timed to burn down and ignite the whole mass some hours after the store had been closed for the day at 5:00 p.m.

So well arranged and dangerous looking was the set-up that Deputy Chief Frank G. Jones telephoned Chief Richard L. Smith to come to the jewelry store and view the extensive set-up before it was dismantled and the most important articles and materials making up the set-up were removed to Detective Headquarters by the police.

Detectives testified that Friedman admitted he was the last person to leave the store after closing for the day at 5:00 p.m.

The morning after the discovery of the arson plot, a constable's sale notice was posted on the doors of the jewelry establishment in the sum of $7,600 due the owners of the building for back rent dating from April 1, 1929, to April 1, 1930.

WM. E. PATTERSON.

Flushing, N. Y., to Have New Station—A new fire station to cost $100,000 will be erected in the Flushing section of New York City. The announcement was made by Fire Commissioner John J. Dorman.

STATE EDUCATION BUILDING, UNDER CONSTRUCTION, DAMAGED

Intense Heat Causes Plaster and Interior Stone Work to Fall—Chief Towney Believes Fire Result of Spontaneous Combustion

TEN firemen were injured, none seriously, in fighting a blaze that started in the partially completed State Education Building, the most elaborate of the new State buildings in Capital Park, Harrisburg, Pa.

Chief Towney believes the fire, which was discovered the morning of October 4, was started by spontaneous combustion of oil scrappings, saturated with benzine and turpentine, which had been carelessly left on top of the scaffolding under the ceiling in the auditorium. Chinese wood oil was placed on the ceiling to hold the mural canvases in place. The oil, according to the Chief, was applied too thickly and it became gummy. For several days workmen were engaged in

Harrisburg Firemen Try to Save Education Building

Fire broke out in the magnificent State Education Building nearly completed in Harrisburg, Pa. The building completed would have cost $4,000,000, and the damage caused by this fire has been placed at over $700,000. Some of the fire officials are inclined to believe that the fire was of incendiary origin, and an investigation was ordered.

soaking it with a combination of benzine and turpentine and later the oil was scraped off.

The scrapings were then gathered together by a workman and placed in a paper bag. The laborer was unable to tell Chief Towney where he had placed the bag but the Chief believes it was left on the scaffolding.

About 100,000 feet of lumber were used in constructing the scaffolding in the auditorium. A night watchman discovered the blaze in one corner of the room and he went to a construction shanty to telephone this information to police headquarters. Fire boxes were installed in the building but were not yet connected.

When the Chief arrived, he sounded a general alarm, for the interior of the auditorium was a mass of flames. The terrific heat caused the marble and plaster to fall from the walls, cracked the floor and weakened the steel structure. Elaborate and costly decorations on the wall were ruined. Marble steps were cracked, as were the Indiana limestone walls.

Fire leaped into the ventilators, the sound-proofing felt of which made excellent fuel for the flames. Hose lines were taken to the roof and streams directed into the ventilators.

Although flames were not visible at windows in the circular rear of the auditorium, they burned rapidly through heavy timbers that formed the scaffolds. Iron decorative railings became red hot. Even five hours after the fire was discovered, the upper floors were still so hot that firemen were hampered in their work. Ladders were placed on the concrete floor to keep the cotton covering of the hose from charring.

The building was to have been completed by January 1, but the fire will delay the work for several months. If considerable of the steel will have to be replaced, it is believed that the damage may reach $1,000,000.

WHAT'S BURNING

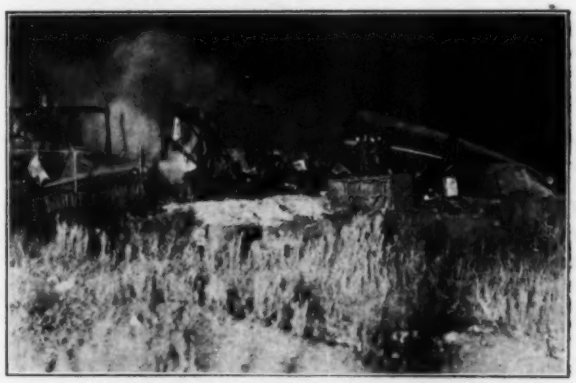
THE following list includes fires of $25,000 loss and over in the United States and Canada, for the periods designated in the headings. These figures, compiled from telegraphic reports, are based on estimates made at the time, and are subject to later investigation and consequent revision. Taken as a whole, however, they give an approximately correct view of the losses incurred. The figures represent loss in thousands of dollars.

Week Ending October 3

	Loss in Thousands of Dollars
FULTON, KY.—Stoner Hotel, owned by T. C. Ford	80
MILANO, TEX.—Property in business district	25
SHELBY, MICH.—Woodworking plant of Herbert Stiles	30
HONEY GROVE, TEX.—Property of Honey Grove Cotton Oil Co.	85
ARKADELPHIA, ARK.—Building of Arkansas Baptist Academy	30
LOCKPORT, ILL.—Northern Illinois Cereal Co. plant	80
TUSKEGEE, ALA.—Portion of Farmers Alliance warehouse	125
McKEESPORT, PA.—Property of Baltimore & Ohio R.R.	30
MEDICINE LODGE, KAN.—Lumber yard of Medicine Lodge Milling Co.	65
GLENARM, ILL.—Store of C. H. Stradley destroyed	25
STREATOR, ILL.—Stock of Montgomery Ward Co. damaged	80
PONTIAC, MICH.—Warehouse of General Motors Truck Co.	35
GLOVERSVILLE, N. Y.—Under's Hotel at Caroga Lake damaged	30
ELLINGTON, CONN.—Property on Prescott Farm	25
WOODBRIDGE, CONN.—Home of Dr. H. E. Hitchcock	25
VENICE, CAL.—Edwards Novelty Co. plant destroyed	65
ROCHESTER, N. Y.—Ward's Natural Science establishment	160
CHATHAM, ONT.—Chatham Daily News plant, adjoining property	125
HARLEM SPRINGS, OHIO—College Inn destroyed	25
PORTSMOUTH, OHIO—Former Carl Bauer Lumber Co. plant	80
CLEVELAND, OHIO—Plant of National Waste Material Co.	80
HORSE CAVE, KY.—Building of Henry Motor Co. damaged	25
DES MOINES, IOWA—Warehouse of G. C. Prouty Wholesale Grocery Co. destroyed	125
WILMINGTON, MASS.—Wilmington Packing Co. plant destroyed	125
ERIE, PA.—Two-story plant of Erie Macaroni Co. destroyed	25
PHILIPSBURG, PA.—Plant of Lansberry Hardware Co., adjoining property, destroyed	150
FAIRMOUNT, MD.—Catlin Bros. store, adjoining property	25
PETERSBURG, VA.—Factory of W. E. Sawyer Tobacco Co.	45
FORT WORTH, TEX.—Store of Trow-Daniel Co.	25
CHICAGO, ILL.—Property of J. W. Peterson Coal Co.	30
MIDDLETOWN, OHIO—Dixie Highway Garage destroyed	100

Week Ending October 10

NEW ORLEANS, LA.—Building of piano company on Baronne St.	35
HARRISBURG, PA.—State Educational Building damaged	700
LAUREL, DEL.—Marvil Co. warehouse, adjoining property	50
NEW CASTLE, OHIO—Plant of Blair Strip Steel Co.	200
PITTSBURGH, PA.—Warehouse of Pittsburgh Garter Co.	25
IONIA, MICH.—Methodist Church destroyed	65
FLEMINGSBURG, KY.—Plant of Flemingsburg Roller Mill	25
BALTIMORE, MD.—Building of Baltimore Country Club	80
MORRILL'S CORNER, ME.—Warehouse of N. T. Fox Co.	50
ENID, OKLA.—Mixing plant of Champlin Refining Co.	65
DALLAS, TEX.—Business building at 4902 Ross Ave.	25
MOLINO, FLA.—Plant of Mathews Canning Co.	25
DAMASCUS, GA.—Wiley Cotton Whse. destroyed	65
MULLINS, S. C.—Bldg. of Burnham Furniture Co.	80
NASHVILLE, TENN.—Mill of J. O. Kirkpatrick & Sons Co.	40
JEFFERSON CITY, MO.—Bldg. of Vogue Shop destroyed	25
CIRCLEVILLE, OHIO—Plant of Container Corp. of America	80
ELGIN, ORE.—Entire block of residential property	45
TOUGHKENAMON, PA.—Creamery of Abbots Dairies, Inc.	45
ATLANTA, GA.—Several Confederate Ave. marble plants	250
WATERFORD, CONN.—Residence of Mrs. E. Manwaring, Oswagatchie	25
EASTON, MASS.—Store of J. E. Howard & Sons	45
OCEANPORT, N. J.—Log Cabin Restaurant destroyed	35
NEW YORK, N. Y.—Argonaut Club, 151 W. 54th St.	40



Wax and Tar Products Start a Bad Fire

Three alarms were turned in to fight a blaze in a three-story building in Brooklyn, N. Y. The factory was used for the manufacture of tar, resin, pitch and wax products. The photograph shows firemen pushing over a wall while fighting the flames.

QUANTICO, VA.—Five Marine Corps. Bldgs. destroyed..... 80
WINDER, PA.—Two stores destroyed..... 30
CHATTANOOGA, TENN.—Royal Theater destroyed..... 25
ST. JOHN, N. B.—Queen Square Theater destroyed..... 50
HUNTINGTON, TENN.—Brown Hotel damaged..... 25
NEW ALBANY, IND.—Hopkins Fertilizer Co. and Wood Mosaic Co. 400
CANFIELD, OHIO—Business section damaged..... 80
GREENWOOD, VA.—"Roshill" home of Mrs. W. R. Massie..... 80

PRACTICAL DATA STRESSED AT NORTHWEST FIRE SCHOOL

Third Annual Short Fire Course Held at University of Minnesota—Talk on Fire Department Hydraulics Enthusiastically Received

By AMBROSE FULLER
Assistant Director, Northwest Fire School

WITH one or two minor exceptions, the Third Annual Northwest Fire School program followed a prearranged program that was sent to the various fire departments. William S. Rathbun, engineer of the National Board of Fire Underwriters, substituted for Clarence Goldsmith, assistant chief engineer of the Board, who was unable to attend because of a meeting in Washington.

The school opened on September 22 with an address of welcome by Dr. Richard R. Price, director of University Extension, University of Minnesota, Minneapolis. The balance of the program follows:

Monday, September 22

The Purpose of the Northwest Fire School—Morris B. Lambie, Chief, Municipal Reference Bureau, and Executive Secretary, League of Minnesota Municipalities.
The State Fire Marshal's Office—Its Operation, Powers of Supervision, Condemnation, etc.—Garfield Brown, Commissioner of Insurance and Fire Marshal, State of Minnesota.
Fire Department Hydraulics — Pumps, Pressures, Hose Streams, etc.—William S. Rathbun, Engineer, National Board of Fire Underwriters, Chicago.
Afternoon Session, Minneapolis Drill School. Evolutions and First Aid Demonstrations.

Tuesday, September 23

Equipment, Training, and Ability of Fire Protection Forces as Elements of Measurement for Fire Insurance Ratings—R. L. Daniels, Engineer, General Inspection Bureau, Minneapolis.
Chemistry of Fire—Introducing Air Drafts—Ventilation—Explosive Gases—Professor L. H. Reyerson, School of Chemistry, University of Minnesota.
Determining Equipment To Be Used—Use of Small or Large Chemicals, Booster Tank and Light or Heavy Stream of Water—Chief Ben Bangerter, Mankato, and Chief S. H. Hanson, Duluth, leaders.
Fire Department Hydraulics — Pumps, Pressures, Hose Streams, etc.—William S. Rathbun, Engineer, National Board of Fire Underwriters, Chicago.
Afternoon Session, Minneapolis Drill School. Evolutions and First Aid Demonstrations.

Wednesday, September 24

Salvage, Overhauling and Preventing Excessive Smoke and Water Losses—John Townsend, Jr., Superintendent, St. Paul Fire Insurance Patrol.
Fire Prevention—Oil Storage Stations and Their Location to Minimize Hazards—J. E. Florin, Superintendent of Fire Prevention, Wisconsin Industrial Commission.
Industrial Safety Precautions and Fire Fighting—Henry McColl, chairman, Minnesota Industrial Commission.
Afternoon Session, Minneapolis Drill School. Evolutions and First Aid Demonstrations.
Dinner and Entertainment, Nicollet Hotel, sponsored by the Minneapolis Fire Department and the City of Minneapolis. Short talks by prominent men, music by the Minneapolis Fire Department Orchestra, and feature entertainment by local theatres.

Thursday, September 25

Salvage and Overhauling Practices—John Townsend, Jr., Superintendent, St. Paul Fire Insurance Patrol, and Chief W. C. Norton, Winona, leaders.
Fire Fighting Tactics; Use of Special Equipment—Cellar Nozzles, Ceiling Hooks—Cutting Holes in Floor—Fires in Veneered Walls, etc.—Chief Fred Pfaender, New Ulm, and Chief F. W. Hanson, Rush City, leaders.
Rural Fire Fighting—E. J. Florin, Superintendent of fire prevention, Wisconsin Industrial Commission, Madison, Wisconsin.
Discussion of Practices in Rural Fire Fighting.
Afternoon Session, Minneapolis Drill School. Evolutions and First Aid Demonstrations.

Friday, September 26

Building and Electric Codes in Fire Prevention and Protection—Inspection of Hazards—William S. Rathbun, National Electrical Code Committee, Engineer, National Fire Waste Council, Chicago.
Open Forum
Mutual Aid and Agreements
Size of Volunteer Departments
Keeping Volunteer Departments Active
Drills and Evolutions and Their Aims
Inquiries
Afternoon Session, Minneapolis Drill School. Evolutions and First Aid Demonstrations.

Members of the school were very much interested in the talk on hydraulics by Mr. Rathbun. His demonstration at the Minneapolis Drill School was particularly impressive. He laid out several lines of hose of different size and took gage measurements of the water flowing through. He also talked on building and electrical codes and the methods of inspection of fire hazards. In small town the chiefs or assistant chiefs are continually being called on to officially approve plans for buildings, to make inspections of buildings under construction and to advise others considering the erection of buildings.

Chief Florin discussed in some detail the question of storing inflammable liquids in both bulk and retail stations. Considerable criticism was voiced by Chief Florin and members of the school as to some of the older methods of oil storage. His talk on rural fire fighting was used as an introduction to the question of agreements between towns and villages or between village fire departments and the unorganized groups outside the territory.

The afternoon work at the Minneapolis Drill School under a corps of able instructors was found to have the usual interest for the men. H. H. Johns, of the United States Bureau of Mines, assisted Capt. James Craigie, of the Minneapolis Fire Department, in handling first aid work. Chief George Lockhart, Drill Instructor of the Minneapolis department, had charge of evolutions.

The banquet on Wednesday evening was contributed by the city of Mineapolis and its Fire Department, and was attended by almost the entire school enrollment. There were about 350 at the school or ten less than the number enrolled in 1929.

CORRESPONDENCE

Telephone Officials Attitude on Fire Alarms

To the Editor:

Concerning the question of getting fire alarms through the telephone exchange, an experience of which you published in the October 1 issue of FIRE ENGINEERING, I am advised by the rural telephone company involved in the instance mentioned that they have now instructed their operators that fire alarm calls must be given preference. I have also received assurance from our largest telephone company, which connects with many small exchanges, that it is a fixed policy with them that all calls for fire, police or doctor must be expedited.

Since I wrote, I have visited two rural fire companies in Illinois, and in both cases was told that the switchboard operators have definite instructions to break any connection on the board if necessary to put through a fire call. In one instance, the siren which calls the volunteer firemen is operated from a button on the telephone switchboard.

Yours very truly,
ARTHUR C. PAGE,
Commercial Editor, *The Prairie Farmer*.

Keystone Fire Chiefs to Meet

Plans have been made for the twenty-ninth annual convention of the Keystone Fire Chiefs' Association that will be held in Lancaster, Pa., November 15. The association is composed of Chiefs of the various classes of Fire Departments in Pennsylvania.

Fire Station Opened for Inspection at Hughsonville—The new fire station erected at Hughsonville, N. Y., has been completed and was opened for inspection recently.

New Pumper at Janesville, Wis.—Janesville, Wis., is the possessor of a new piece of apparatus, equipped with a pump and two large water tanks.

Spring Valley to Get New Apparatus—Bids have been asked by the City Council of Spring Valley, N. Y., for a new pumper.

Cleveland Plans Purchase of Radio Fire Apparatus—Safety officials of Cleveland, Ohio, have considered radio so valuable to the Police Department that they are planning to extend its use to the Fire Department also.

New Fire Stations Inspected at Erie—The newly erected drill tower on East Avenue and fire stations on the east and west sides of the city were recently opened for inspection at Erie, Pa.

CARELESSNESS THE CAUSE OF UNUSUAL CONDITIONS AT FIRES

"No Two Fires Are Alike" Because of Lack of Fire Prevention Observances — The Human Element Can Often Be Blamed

By CHIEF ROSS B. DAVIS,
Fire Department, Philadelphia, Pa.

YOU may have heard of the saying that "there are no two fires alike, and consequently there is no definite or established uniform method by which they could be handled." Such statements are incorrectly and thoughtlessly made. It is not the fire that differs; it is the unusual conditions which surround the fire. A pine board or any other material will burn the same way in Florida, as in Maine or California, providing the atmospheric conditions are identical, therefore the same methods can be applied to extinguish it. My purpose and object is call attention to the all important factor surrounding all fires which makes them more difficult problems to solve. It is this: Fire prevention is not sufficiently stressed. If conditions are normal, good housekeeping prevails, and a strict watch and inspection is made regularly, unusual happenings in time of fire may be avoided.

Chief Ross B. Davis

Unusual Happening Caused Cleveland Clinic Disaster

I can recall standing on beautiful Euclid Avenue in the city of Cleveland, admiring the Cleveland Clinic Hospital Building a few years ago. To look at, it appeared to be the last thing in architecture. It was built of fire-retarding construction, so consequently the thought that there could possibly be a serious fire there so long as the building stood, never entered my head. You will remember that on May 15, 1929 at 11:36 o'clock a fire took place and in less than one hour after this, 123 dead bodies were laid upon the pavement surrounding the building. Later on, a few more died, increasing this total to 125.

Upon inspection of the conditions surrounding this disaster, it was found that there was an improvised film room located in the basement, at which spot there had formerly been a coal bin. The deadly fumes rose up the service elevator shaft, the stairway from the cellar, and along the various pipe risers which entered the upper floors of the building from a tunnel especially constructed to convey the main steam lines. This tunnel passed through the film storage room where it collected the gasses rapidly formed by the decomposing films. There are said to have been 8,500 pounds of films stored in this basement room.

After a lapse of about 10 minutes after the smoke was noticed, fire broke out, followed by an explosion, to be followed later by a second and third explosion. These explosions resulted in blowing out a large skylight over the central hall and stairway of the building, which served to disperse to a certain extent, the noxious gases. The explosions also blew out wired glass protection around the elevator shaft, glass housing around the fire hose leading to the basement, and other points of entrance for the accumulated gases into the upper floors of the building.

It is true, that as long as this had been used as a coal bin, for which it was originally constructed, no disaster such as this could ever have taken place. Permitting it to be converted into a makeshift film room, without provisions for factors of safety, is the actual cause of this great sacrifice of life and the damage to the building.

Cause of Bad Blaze in Fire-Resistive Warehouse

Another blaze I want to call attention to is the Weed Hardware fire. This took place on April 17, 1929, in the fire-resistive wholesale warehouse of Weed & Co., of Buffalo, N. Y. This offers another good example of the fact that a serious loss is possible in a modern fire-resistive building having good public fire protection readily available. The fire evidently originated from sparking of the 220 volt elevator motor switch. The loss on the contents of the building was heavy, being $351,997 out of a $502,853 value. The loss on the building was $46,000 of the estimated value of $196,911. There was also considerable furniture and fixture loss. The reasons for the heavy loss may be summarized as follows:

1. The fire probably burned for forty-five minutes before being discovered.
2. The alarm was delayed ten minutes by the failure of the watchman.
3. The watchman gave the fire department the wrong location.
4. The elevator shaft in the building was not enclosed, and the floor openings around the package chute were not tight. The elevator traps, while doing some service in preventing the fire from reaching the fifth floor, permitted the fire to reach the fourth floor and prevented ventilation.
5. The area of the building was large.
6. The west wall of the building was blank, which prevented some effective fire-fighting.
7. The floors were congested with a large amount of stock piled closely and on wooden shelves extending to the ceiling. This facilitated the rapid spread of the fire and prevented penetration by hose streams.
8. The floors leaked profusely. The basement contained seven feet of water a few hours after the fire was under control.
9. There was only one stairway in this building, and this was not ventilated. There were no fire escapes, and the firemen were unable to enter the upper floors.
10. The narrow streets around the building prevented the effective streams for the first several minutes of the fighting of the fire.
11. Overhead wiring in the alley at the rear of the building prevented the effective use of ladders and interfered with hose streams.

Careless Handling of Chemicals and Other Highly Combustible Materials

While discussing these matters I would like to call attention to the six-foot cylinders containing hydro-ammonia which may be found in most business places. When going through a building you may have seen them surrounded by inflammable materials, without considering them a dangerous fire hazzard. Although they are made of 5/16-inch pressed steel, built to withstand high pressure and serious abuse, they contain a fluid which boils and freezes more quickly than any other fluid. When they explode they can blow up a building, so they could be remembered as a menace to human lives and property. This warning may also be applied to acetylene tanks and burners. The careless handling of gasoline is another important factor which demands your attention.

These are only a few of the many conditions with which the fireman should be familiar, but the point that I want to drive home, is the fact that if the conditions surrounding the fire hazards are attended to through constant inspection by the trained eye of the members of our Department, the fire hazards will no longer be a source of loss of life and property.

In my judgment, we are partly responsible for permitting these hazards to exist. Let me emphasize the fact that it is not the fire itself, but the conditions surrounding it, which cause unusual happenings in time of fire. Let us remove these conditions.

(From a paper read before the annual convention of the Eastern Association of Fire Chiefs.)

Firemen Are Now Trained in Courtesy

When the Fire College in Portland, Ore., takes hold, residents of the city will notice a Fire Department trained in all branches of courtesy to the public.

Members of the department will be taught to be polite and to remember that at all times they are serving the public.

Firemen will learn not to take front row seats at prize fights when they are on duty there, but to stand back out of the way so the customers may see the fights.

They will not take seats in street cars on which they are riding free as long as fare-paying customers are standing.

They will remove their hats in elevators.

They will furnish information to anybody who asks for it, whether it is on the street or at a fire station. If they don't know the answers they will find out.

They will be taught to help elderly persons across the street intersections and to look after the lame, halt and blind.

Battalion Chief Edward Boatright, head of the college, said that the course was added to the Fire College at the direction of Commissioner Riley who felt that there are some things not all of the firemen know about courtesy.

C. Peterson, of Stanley & Patterson, Dead—C. Peterson, representative of Stanley & Patterson, died suddenly on September 2.

BEST METHOD OF APPLYING ARTIFICIAL RESPIRATION

Some Valuable Hints to Firemen as to the Treatment of Those Rendered Unconscious—The Prone Pressure Method

By LIEUT. CHARLES G. EISENHART.

Assistant Drillmaster and Lieutenant of Rescue Squad, No. 2, Cleveland, Ohio, Fire Department

THE use of artificial respiration dates back to the year 1650 when it was put to the test at Oxford, England. The method used was rolling the patient from side to side and exerting a pressure as the patient was on his side. In 1767 a bellows was used through the nose in Australia. The first scientific method was practiced by Marshall Hall in 1856, and in 1857 the Sylvester method was introduced.

After much experimenting Dr. Schaefer introduced the prone pressure method which from time to time has been improved upon, until we have what is now generally used throughout the world.

Rapid Progress in Methods of Resuscitation

Rapid progress has been made in the past fifteen years in methods of resuscitation and many papers on this subject have been presented by the medical profession, but as these papers contain medical terms they are not generally understood by the layman. First aid instructions on artificial respiration have been prepared, but they tell how and none explain why we breathe.

The air which we breathe consists of about one part of oxygen to four parts of nitrogen or 20% oxygen and 80% nitrogen. Oxygen is the important constituent and without it there can be no life. Due to reaction in the body tissues by process of oxidation or burning, oxygen is necessary, and carbon dioxide is given off. It is therefore necessary that the blood carry fresh oxygen to the tissues and take away the waste product of combustion, carbon dioxide.

How the Blood Circulates

In order that the process of breathing may be understood, it is necessary that we have some knowledge of the blood circulation, as it is the blood that carries the oxygen of the air to all parts of the body.

The heart, which is the chief organ of circulation, is a hollow, muscular organ and is divided into four chambers. The two upper chambers are small, with thin walls and collect the blood. The two lower are large and have thick walls and serve as pumps for the blood. The blood is collected from all parts of the body and is poured into the right collecting chamber through a system of veins, and inlet valves. From the right collecting chamber it passes through a valve to the right pump chamber. In contracting during a heart beat, this chamber forces the blood through an artery to the lungs. The blood is returned to the heart through two veins to the left collecting chamber and then through to the left pump chamber, and this chamber, by contracting, pumps the blood through arteries to all parts of the body.

These arteries divide and sub-divide, getting smaller with each division and sub-division and reach all parts of the body. The smallest blood vessels into which the arteries are divided are called capillaries. These capillaries in turn unite and form veins, and as the unison takes place they get larger. It is mostly in the capillaries that the oxygen which the blood carries, is given off to the various tissues and the carbon dioxide is taken up by the blood.

How Air Enters the Lungs.

The air is inhaled through the nose to the wind pipe, which is a hollow tube through which the air passes from the nose to the lungs. This wind pipe divides into two main air passages, one of which goes to each lung. The main air passages of each lung divide and sub-divide, getting smaller with each sub-division and finally terminate in a very thin walled aerating cells or sacks. It is in these sacks that an interchange of gases takes place, the blood giving off carbon dioxide and taking on a fresh supply of oxygen. In the blood stream there are little particles called corpuscles, which are the carriers of oxygen in the blood. These corpuscles or boats as we will call them have an affinity for carbon monoxide 300 times greater than for oxygen; it therefore can be seen that if the boat prefers carbon monoxide to oxygen, how quickly the oxygen will be crowded out. With each corpuscle thus loaded with carbon monoxide, there is no room for oxygen and when the body tissues are without oxygen, asphyxiation takes place.

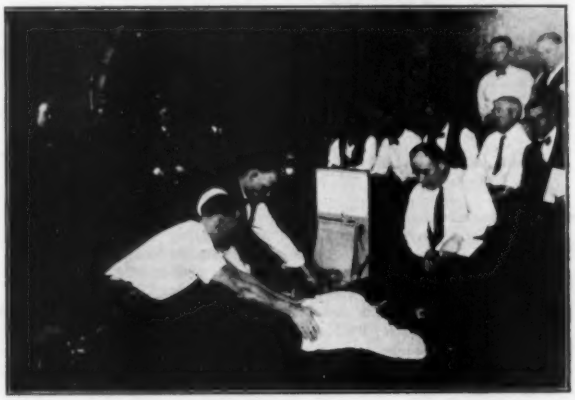
The Function of Respiration

The act of respiration is an involuntary function which can be made voluntary by an act of will. It is accomplished by enlarging the chest cavity, and by means of the diaphragm. The diaphragm is a flat disc shaped muscle dividing the lung cavity from the abdominal cavity. The diaphragm plays an important part in the respiratory functions of the body. When the diaphragm rises, it pushes against the lungs and at the same time the chest cavity is depressed. This process forces the air from the lungs. When the diaphragm descends, the chest cavity enlarges, thereby drawing air into the lungs. The process of drawing air into the lungs is called inspiration and forcing the air out is called expiration. Inspiration and expiration together are called respiration or breathing. Should the diaphragm become paralyzed, breathing ceases and if not started again at once death takes place.

There is a space between the point of life and the point of death that is known as suspended animation. If the patient receives prompt attention while still in the suspended animation stage, chances are good for recovery. The amount of time it will take to pass from the point of life to the point of death through the suspended animation stage will differ in each case, depending upon the constitution of the individual affected.

Causes of Asphyxiation

The most common causes of asphyxiation are as follows: Inhalation of carbon monoxide, gas laden smoke, drowning and electric shock. Electric shock is not a true asphyxiation, but a paralysis of the diaphragm and other respiratory muscles. Some electric shocks merely render the victim unconscious or stop his breathing. Artificial respiration is beneficial in these cases. If, however, the heart and other vital functions have been stopped by the electric shock, then artificial respiration is of no value.



Demonstrating Proné Method of Resuscitation Before Class at Cleveland Drill School

Captain Madden, of Rescue Squad No. 1, Cleveland, is shown at Inhalator; in front of Inhalator is Captain Lavelle, Drill Master; Lieut. Charles G. Eisenhart, Rescue Squad No. 2, and Assistant Drill Master, is using the prone pressure method.

However, this should not stop the use of artificial respiration and other first aid measures. By making a person breathe artificially, oxygen is forced back into the lungs, where it can be picked up by the blood and carried to the tissues of the body. Lose no time but go to work at once with the artificial respiration.

Method of Treatment.

Promptly remove the patient from smoke, water or electric contact and place him on a blanket or other dry warm surface, face down. Place the right hand under patient's head with face turned toward the left and the right cheek resting on the back of the hand. Place left arm above the head at an angle of 45 degrees. Straddle the patient's left leg, with one of your knees on either side, drop to a squatting position, with your buttocks resting upon your heels.

Next lean forward with your arms extended and place the hands, fingers pointing downward, on the patient's back with

the little finger of each of your hands resting on and following the lower or floating ribs, keeping your wrists four inches apart. Push forward with both hands forcing the diaphragm upward and at the same time swing your body forward in a rising motion, being sure to hold the forward push, letting the weight of your body exert a pressure on the victim. Then release the pressure by snapping the hands off the victim's back in a rocking motion, heel of hand leaving first and finger tips last, swinging arms out loosely and come back to a sitting or rest position, with your buttocks resting upon your heels. Repeat this evolution to the count of 1, 2, 3, 4, 5.

One complete evolution should consume five seconds or at the rate of twelve evolutions or respirations per minute. Continue this treatment for at least two hours, unless the patient begins to breath sooner. Never use artificial respiration on any one that is unconscious and is breathing.

Care of the Patient

Do not allow the patient to be moved after respiration or natural breathing has started, for at least one hour. Cover the patient and keep his body warm. By moving the patient before he has had a chance to gain a little strength will cause him to have a relapse and stop his breathing and the chances are that you will not be able to save him after that. Always call a doctor and be guided by his orders.

It is well worth anybody's time and effort to learn how to use the prone pressure method, as one life saved by the use of same will more than repay you for your trouble. A human life can not be figured in dollars and cents—once life is snuffed out it cannot be replaced.

(From a paper read before the annual convention of the Ohio Fire Chiefs' Association at Portsmouth, Ohio.)

Essay Medals Presented in New York City

Four hundred and twenty pupils of the public and parochial schools of New York City were presented with medals on Friday, October 10, by Mayor Walker at City Hall, in recognition of their having won the fire prevention essay contest sponsored by the New York Board of Fire Underwriters, doners of the medals.

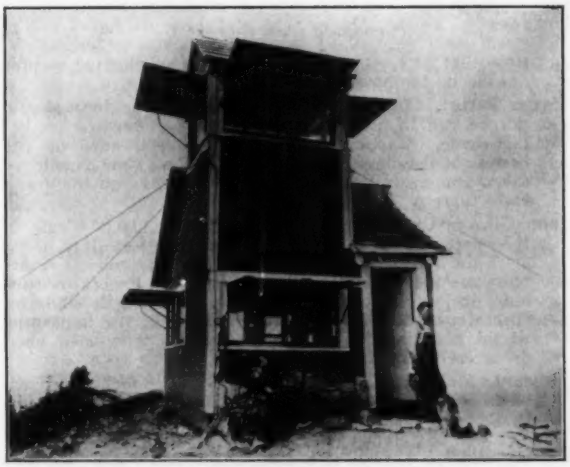
The little ones wrote essays on "Safeguarding the Home Against Fire" and the papers were examined by fire prevention inspectors and rated. Several thousand children in the upper grades competed.

This is an annual feature of Fire Prevention Week in New York City and it has done much to stimulate interest in that subject among young America.

Seventeen Die at Russian Film Show—Seventeen persons, including several children, died from burns as a result of an upset kerosene lamp during a motion picture show in Astrakhan, Russia. The pictures were being exhibited in a workers' club.

Bridgeport, Conn., Tests New 1,000-Gallon Pumper

Following the customary Underwriters' test, Bridgeport, Conn., has accepted a 1,000-gallon Mack pumper, the first apparatus of this manufacture. The test was witnessed by members of the Board of Fire Commissioners, city officials and a number of visiting fire officials.—THOMAS F. MAGNER.



There is Very Little Talking Back at this Job

This little kingdom 5,985 feet high on Bench Mark Mountain in Snohomish County, Mich., is presided over by a forest ranger and his dog. The lookout station put in service by the Forest Service last spring broke all records for sighting fires this summer when it reported five major blazes in fifteen minutes, one of which burned over a half section of virgin timber. The ranger has the almost perpetual job of scanning the horizon and he reports his findings to headquarters by means of a telephone.

13 Denver Firemen Overcome by Chlorine

Chlorine gas that escaped from a large railroad tank that was being unloaded at the Denver Fire Clay Company, Denver, Colo., overcame twenty-six persons, including thirteen firemen. The leak started as a crew of men employed by the fire clay company were transferring the liquid gas into cylinders. When the superintendent of the company saw the gas clouds he called the Fire Department.

Engine 10 responded and hoped by cooling the tank to congeal the metal around the leak. The entire company was overcome. Engine 5 responded and immediately started to drag the less fortunate firemen to a safer zone. The gas fumes even swept over the city. Chief John Healey rushed to the scene and helped carry four firemen to the hospital in his own car.

A worker at the plant donned a gas mask that he obtained from a fireman, climbed up the side of the tank and succeeded in shutting the valve. This stopped the escape of chlorine gas.

The firemen and others overcome by the gas were carefully watched by doctors for fear that pneumonia might set in.

Suspicious Fires on Increase in Milwaukee

After receiving a report from insurance interests that the fire loss in Milwaukee for the first half of 1930 was twice that of the first six months in 1929, Chief Peter Steinkellner has decided upon rigid inspection to determine the origin of all fires.

Chief Steinkellner said: "The number of fires of suspicious origin has increased this year. Years of bad business usually bring a higher quota of fires than in periods of normal conditions. There are many cases where the department, the insurance men and the investigators are satisfied the fire was set for insurance purposes, and yet the job was so well done that the evidence necessary to convict cannot be obtained."

The Chief is using the warning of higher rates if there are higher fire losses, to interest the general public in fire prevention.

Fire Station Discussed at Dearborn—The city council of Dearborn, Mich., has been asked to approve a $127,000 bond issue for constructing and equipping a new fire station in the south portion of the city. The cost of the proposed building is approximately $81,000, the site $16,500 and the equipment $24,800. Also additions and changes in the fire alarm system will require an expenditure of about $5,000.

The Round Table

(*Continued from page* 890)

time that at least ninety per cent of our motor trouble has been eliminated by this method.

Rance Pettitt, Chief, Brownwood, Texas: Engines should not be run in fire stations except when repairs are being made. Starting engines too often is hard on the battery and unless you run them a long time you leave the chambers full of gasoline which seeps into the crank case, thereby diluting the oil.

John Gibson, Chief, Mount Vernon, N. Y.: It is a rule in this department that the shift coming on duty must start the motor and see that the gasoline and oil reservoirs are filled and that the apparatus in general is running properly. This method has proved worth while on several occasions as we have found that the apparatus would not start. Other minor defects have also been discovered during the test.

James J. McMillan, Chief, Orange, N. J.: Our experience has been that running engines in quarters is a good thing as it enables the driver of the incoming shift to discover any deficiencies in the operation of the motor. We run our motors at 8 a.m., and 6 and 9 p.m., for five minutes. While choking to start thins out the oil some, we believe the extra cost of changing oil more often is money well spent.

James C. Mooney, Chief, Watertown, S. Dak.: Engines are started every other morning in the warmer weather and every morning during the winter. We have been doing this for some time and have never had trouble with the apparatus stalling when needed. Also engines are gone over after every run. We have one man who takes care of this work and sees that the lights, gas, oil and the apparatus in general are looked after.

Chief of Fire Dept., St. Helena Island, S. Car.: Our engines are run daily or more often in the cold weather and two or three times a week in the summer. On one occasion our trucks were allowed to stand without being run from one alarm to another. In a small town this is often quite a while. When needed, the trucks would not start and we were delayed for several minutes. When apparatus is not operated, the gasoline deteriorates, the ignition points stick, and the batteries run down. Therefore it is extremely important for trucks to be run every so often in smaller departments.

J. M. Andrews, Chief, Sherman, Texas: We run our trucks out on the street twice daily. By so doing, we secure the best results. We very seldom run the apparatus idle. They are taken out on the street and out in gear and given a road test. Our engines are never worked harder than is absolutely necessary.

R. D. Gambrell, Chief, Dallas, Texas: Our apparatus is started three times a day, at 8 a.m., 12 o'clock noon, and 6 p.m. On changing shifts the driver coming on duty starts the engine to see that everything is O.K. Engines should be started more often in cold weather in order to keep them loosened up, but a motor should never be raced while cold.

R. E. Holcomb, Chief, Olympia, Wash.: We start our runs once every twelve hours. By warming up the motor, the operator is given a chance to check up and see if everything is working properly. Five minutes is about the length of time it takes to get the motor warm and to clear the spark plugs out.

B. J. Reilly, Chief, Ithaca, N. Y.: We do not believe it is necessary to start engines and, in fact, believe that it does more harm than good, especially during the winter months. Since we have discontinued this practice of starting engines in quarters, we have experienced far less dilution of oil in the crank case and no trouble in starting.

C. T. Lindsay, Chief, La Grande, Ore.: Engines are started twice daily at 6 a.m. and 6 p.m. Since installing this policy we have never been troubled with having the apparatus fail to start when it is called to a fire. Also, the driver is given a chance to check over the entire motor for any other defects that might need repairing.

Thos. M. Dillon, Chief, Grand Island, Neb.: We have two shifts, day and night. When the day driver coming on duty arrives he starts the engine to be sure that it is O.K. This is also done when the night driver comes on duty. This method has been working very well. It also enables us to be able to check up and see if the drivers have started the engines in the event of the apparatus failing to start at any time, thereby delaying the response to a fire call.

W. O. Matthews, Chief, Bozeman, Mont.: Engines should be run in the fire house in order that it may be known that the apparatus is working properly. Starting the motors at the beginning of each shift and running same until it is certain that everything is O.K., is a good practice. My experience has been that the better the condition of your apparatus, the quicker you will be able to respond to alarms.

Thos. Corson, Chief, Millville, N. J.: Our trucks are run every day about five minutes. This is done when the drivers change shifts. Minor defects can be checked up and adjusted if they are found.

James Craney, Chief, Missoula, Mont.: It is a good practice to run engines in quarters every twenty-four hours. However, the building should be well ventilated when so doing. I have been observing this practice since the department was motorized and on several occasions have found trouble that would have been serious had it not been our policy to start the engines daily.

H. H. Wardleigh, Chief, Ogden, Utah: Apparatus is turned out twice daily. However, we never allow the motor to be raced at any time. If adjutsments to the carburetor have to be made, and it is necessary to race the motor, the apparatus must be in motion.

Wm. J. Joyce, Chief, Spokane, Wash.: Whenever apparatus has been idle for twenty-four hours we turn the motor over to make sure that it is in proper runing order. This method has worked out very well here.

Frank Northcutt, Chief, Covington, Ky.: The plan of starting engines in quarters is feasible, but provision should be made for plenty of ventilation. In extreme cold weather motors should be started morning and evening. Under normal conditions once a day is sufficient. Experience has taught us that if the apparatus is not started batteries are liable to go dead.

Thos. Almond, Chief, Central Falls, R. I.: It is a good plan to run engines in the fire house but this does not guarantee that the apparatus is in proper operating condition. We start our engines two or three times a week, but do not count on this as a guarantee of perfect operation.

W. C. Norton, Chief, Winona, Minn.: Engines should be started in the fire station twice daily as a check on the ignition. However, proper ventilation should be provided before this is done.

Chris W. Noll, Chief, Poughkeepsie, N. Y.: Our department works on the two-platoon system, changing at 8 a.m. and 6 p.m. The fireman going off duty starts the motor running and the one coming on duty shuts it off. This policy has been carried out for the past eight years very successfully. It has entirely eliminated the argument that the motor was working properly when the men went off duty.

Phillip A. Hattemer, Chief, Patchogue, N. Y.: Apparatus is started in quarters once a day. If this were not done and the apparatus was not used during the week there

What Was Left of a Lumber Yard After a Visit by Fire

Above is a picture of the ruins of the Hamilton Millwork Company, Paterson, N. J. The blaze threatened nearby tanks of the Gulf Refining Company. A rough estimate of the damage was set at $200,000.

is liable to be trouble when a call is received. Although daily starting of the engine allows gas to get in the crank case, it is better to change the oil more often than have the apparatus fail to start.

Guy Giddings, Chief, Hastings, Mich.: Our engines are started twice a day, at 8 o'clock, morning and night. We have never had any trouble with our apparatus failing to start.

Harry Schultz, Chief, Johnstown, Pa.: We have a test made three times a day, at 8 a.m., 12 o'clock, and 6 p.m. This department works under the two platoon system, the shifts changing at 8 a.m. and 6 p.m.

Geo. A. Wood, Chief, Niagara Falls, N. Y.: Motors are started every twenty-four hours. This is done to enable the oncoming shift to know that the apparatus is O.K.

Wm. J. Johnston, Chief, Marquette, Mich.: Our engines are started in the fire station once a week. We have been using pumpers for only three years, but during that time have experienced no failure.

August G. Derra, Chief, Schenectady, N. Y.: Our engines are started in the fire house at least once in forty-eight hours. However, this does not guarantee that the apparatus will function when an alarm is received. Also, monoxide gas is thrown off when engines are started indoors and this is not conducive to health.

Roger Boyle, Chief, Jersey City, N. J. It is a good practice to test engines to ascertain whether or not they are in running order. Our rules call for the engine to be tested in the morning before the platoon on duty is relieved and at 6 p. m. before the incoming platoon reports for duty. By so doing we can be sure that when an alarm is received the engine will start and delays will be eliminated.

C. V. Hedges, Chief, Huron, S. Dak.: Engines in smaller departments should be started two or three times a week as few fire calls are received during the year. In larger cities where calls are received every day I do not think that such a practice would guarantee the proper working condition of the apparatus. During warm weather we start the engines twice a week, but in the cold weather, this is done daily. However, a test is not a guarantee that the apparatus will function properly when a call is received.

* * *

ANSWERS TO PREVIOUS QUESTIONS

The following is in reply to a question on whether or not the department has an insurance policy to compensate firemen for accidents received in line of duty:

A. F. Flanigan, Chief, Mapleton, Me.: No, we don't have an insurance policy for the benefit of injured firemen. However, it is an excellent thing to have.

W. G. Saule, Chief, Norridgewock, Me.: We do not have an insurance policy to compensate firemen for injuries. We had one man who broke his leg. His hospital bills for the first trip was almost $1,000. At our meeting last March the town settled with him for $2,000. He was in the hospital for about eight weeks and even now his leg is not what it should be. For this reason I believe every town should carry insurance to compensate firemen.

* * *

The following replies were received in answer to the question on what precautions are taken to safeguard places of public assembly such as theatres and dance halls:

Thos. Millburn, Chief, Jeannette, Pa.: We assign men to watch such places and see that there are no existing hazards. A uniformed man seems to have some bearing on the people. No smoking is permitted, and overcrowding is also prohibited.

Harry E. Colby, Chief, Franklin, N. H.: Firemen are assigned to theatres, lecture halls, dance halls, etc., as a precaution against fire.

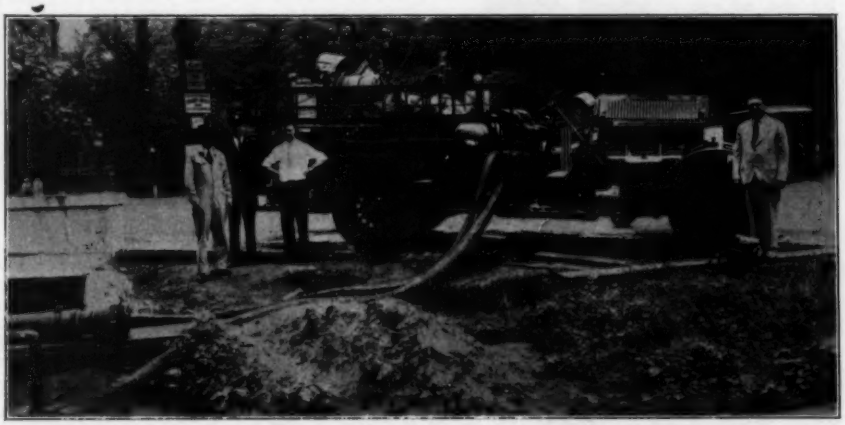
Harry Whiteside, Chief, Beatrice, Neb.: Churches and picture houses are protected by not allowing any parking in front of the doors. When a road show is in town, or an entertainment is being held in a hall, we have one or two uniformed firemen on duty. Dance halls are not protected as they are all out of the city limits.

Napoleon Belfy, Chief, Muskegon, Mich.: As a precaution against fire we see that aisles are provided and kept unobstructed. Exits must be provided, fire extinguishers must be on hand and in working order. All scenery and decorations must be fireproof. General monthly inspections of the entire building are made, and uniformed firemen are detailed to all large public gatherings except theatres and dance halls.

Pumper Works Steadily Over 33 Hours

During the early part of August when many communities were affected by the serious drought conditions, the water supply of Annapolis, Md., had diminished at an alarming rate. As an emergency measure the Mayor and Water Works officials called upon Chief Jesse Fisher, head of the Fire Department, and after the conference it was decided to use a fire department pumper to pump water into the city's nearly depleted reservoir from a nearby stream.

A 1,000-gallon pumper forced the water through six hundred feet of 2½-inch hose and four hundred feet of 2-inch galvanized iron pipe. The pump started operating on August 10 and worked continuously until September 13, when the supply in the reservoir was increased by rains and by water from the reservoir of the United States Naval Academy. In all, the pumper operated 33 days and four hours.



American-LaFrance Pumper at Annapolis, Md., That Pumped Water into Reservoir During Drought. Chief Fisher Is at the Extreme Right

The pumper was driven back to headquarters, where the oil was changed, the cooling system flushed out, and the apparatus was then ready for further fire department service. During the time the pumper was used to augment the water supply of Annapolis, it consumed 1,675 gallons of gasoline, 130 gallons of oil, and it furnished the city 7,000,000 gallons of water.

In reference to the pumping record, Chief Fisher stated: "The machine which accomplished this feat is a Type 12 American-LaFrance triple combination 1,000-gallon pumping engine purchased years ago and it has been in continuous service in the Annapolis Fire Department."

Tax Supports Slatington, Pa., Department—For several years the Fire Department of Slatington, Pa., has been supported by a one mill tax levied on property owners. Abner F. Boyer has been Chief of the department since May 1926.

Wentworth Speaks in Seattle, Wash.—Franklin H. Wentworth, of the National Fire Protection Association, spoke at a meeting of the chamber of commerce in Seattle, Wash., on "The Nation-Wide Fight to Protect Property From Destruction by Fire."

Moss Ordered Scraped From Roofs—The Fire Inspector of Corvallis, Ore., has ordered that growths of moss be scraped from the houses. He said that on some houses the moss was several inches thick, and now because of the dry season, was almost like tinder.

FIRE PREVENTION ORDINANCE FOR CITIES AND TOWNS

It Establishes Bureau of Fire Prevention—Prescribes Regulations for Hazardous Materials and Processes

(*Continued from last issue*)

THE following Fire Prevention Ordinance has been prepared by the Engineers of the National Board of Fire Underwriters and is recommended by that organization for adoption by cities and towns. While it is not expected that in all cases smaller cities will find need for an ordinance of such length, it is recommended by the Board that a complete set of regulations be adopted in all cases, for even though there may be no immediate need of regulation of a particular hazard, every growing community is sure to have these hazards introduced sooner or later, and it is better to be prepared for them than to develop unrestricted and then try to regulate them. The ordinance will be published in its entirely serially in FIRE ENGINEERING. *Following is a continuation of Part 6—Photographic and X-Ray Nitro-Cellulose Film*:

603. *Cabinets.*

(a) Cabinets shall be of approved insulated construction and shall not exceed 10 cubic feet capacity.

(b) Cabinets shall be equipped with at least one automatic sprinkler in each compartment unless specifically approved for use without automatic sprinklers.

(c) Each cabinet shall be provided with a vent to the outside of the building. The vent shall be so constructed or protected by a substantial metal grid as to prevent stoppage of vent in case of combustion or decomposition of film contents. For a cabinet having 10 cubic feet inside volume the vent area shall be not less than 56 square inches. For smaller cabinets the vent area shall be proportional except that no cabinets shall have a vent area of less than 14 square inches.

(d) Vent flues inside the building shall be of a construction equivalent to No. 18 U. S. gauge metal covered with 1 inch of heat insulating material.

604. *Vaults and Outside Storage Houses.*

Vaults and Outside storage houses shall be sprinklered and vented and in strict accordance with the standard requirements for vaults and/or outside storage houses, and satisfactory to the Bureau of Fire Prevention; provided, however, that outside storage houses which are not within 100 feet of any other building are not required to have automatic sprinkler protection.

605. All wiring and electrical equipment in rooms or vaults where film is stored shall conform to the National Electrical Code; only incandescent electric lights shall be permitted and in vaults these shall be protected by wire guards, vapor-proof globes or both. Portable or extension cords shall not be used in any storage vault.

606. Smoking shall be prohibited in rooms where film is stored or in developing or similar work rooms. Conspicuous "No Smoking" signs shall be posted in prominent places.

607. No film shall be stored within 2 feet of steam pipes, radiators, chimneys or other source of heat.

608. Fire pails or extinguishers shall be provided as required by the Bureau of Fire Prevention.

Part 7. Calcium Carbide and Acetylene

701. No person shall store or keep calcium carbide in excess of one hundred pounds, nor operate an acetylene generator having a carbide capacity exceeding 5 pounds, without a permit.

702. Calcium carbide in excess of 600 pounds but not in excess of 5,000 pounds, may be stored in a separate room or compartment inside a one-story building containing other occupancy, provided such room or compartment is separated by a fire-resistive partition from other parts of the building, and without cellar or basement underneath such carbide storage section. This room or compartment may also be used for storage of fuel gas cylinders. Adequate ventilation shall be provided.

703. Not to exceed 5,000 pounds of calcium carbide may also be stored within an inside generator room or compartment of construction as above mentioned when such generator room or compartment is located in a one-story building without cellar or basement underneath the generator section. Such generator room or compartment may also be used for the storage of fuel gas cylinders.

704. Calcium carbide in excess of 5,000 pounds shall be stored above ground in one-story buildings without cellar or basement, and used for no other purpose, except the storage of fuel gas cylinders, or an outside generator house.

705. Location of such storage buildings shall be outside congested mercantile and manufacturing districts.

Construction used shall be such as to ensure a dry, waterproof building. Adequate ventilation shall be provided.

If storage building is of incombustible construction, it may adjoin other one-story buildings if separated therefrom by unpierced fire walls. If detached less than 10 feet from such buildings or buildings, there shall be no opening in any of the mutually exposing sides of such buildings within said distance.

If the storage building is of combustible construction it shall not be within twenty (20) feet of any other one- or two-story building, nor within thirty (30) feet of any other building exceeding two stories.

706. No person shall erect, maintain or use any acetylene gas generator or machine for which a permit is required until the plans for the installation shall have been approved by the Bureau of Fire Prevention. Unless of the pit type installed outdoors and underground, such installation shall be permitted only in a well-ventilated fire-resistive outbuilding, the size of which shall not exceed that required to allow free operation of the apparatus and the storage of the necessary carbide.

Part 8. Compressed Gas Systems Other Than Acetylene For Lighting and Heating

801. *Application of Rules.*

The following regulations are intended to apply to installation and operation of compressed or liquified gas systems for house lighting and cooking, including the handling and storage of the charged and discharged cylinders, and are not intended to apply to plants devoted to the manufacture and compression of the gases utilized in these systems.

802. *Use of Standard Systems.*

Only such systems shall be used as have been examined and tested and found to be safeguarded as far as practicable.

803. *General Precautions.*

(a) The changing or charging of cylinders shall be by daylight only and no fire or artificial light, other than incandescent vapor-proof lights, shall be permitted within ten feet of the cylinders. Electrical apparatus, such as switches and other apparatus which may cause sparking, shall not be located in the vicinity of the cylinders and regulating valves.

(b) Extra cylinders shall be stored in a suitably ventilated cabinet, located outside of main building or otherwise stored where they will be protected from extreme heat and accumulations of ice and snow. No readily combustible material shall be stored within 10 feet of cylinders.

(c) If cylinders are charged by means of an automobile tank truck, the motor of the latter shall be stopped before the charging operations are started and operation of the motor during such charging operations shall be prohibited.

804. *Location of Cylinders and Regulating Valves.*

(a) Cylinders and regulating equipment shall be located outside of buildings. The discharge from safety reliefs shall be located not less than 5 feet away from any opening in any building.

(b) Cylinders and regulating valves shall be enclosed in a well ventilated steel cabinet or otherwise protected from tampering or exposure to the weather.

805. *Valves.*

(a) Valves in the assembly of the system shall be arranged so that the changing or charging of cylinders may be accomplished without shutting down the system.

(b) The system shall be provided with a shut-off valve to the building.

806. *Piping.*

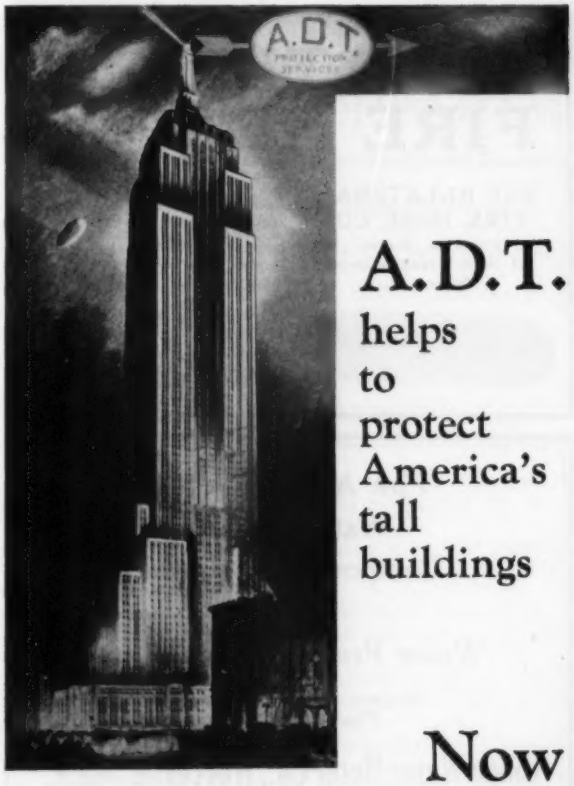
(a) In systems of a type in which compressed gas in liquid form enters the building only heavy walled seamless brass or copper tubing may be used. Internal diameter of such tubing should not be greater than 3/32-inch.

(b) Tubing should be as short as possible and so attached and protected as to avoid injury or damage. Tubing should be tested and proven tight under a pressure of at least 50 pounds per square inch after all connections have been made.

(*To be continued*)

Butler May Install Fire Alarm—Butler, Pa., is considering the installation of a Gamewell fire alarm system.

Floyd Burch, Chief of Hartford, N. Y.—Floyd Burch has been elected chief of Hartford, N. Y. In the previous issue the city was reported as Glens Falls. William J. Gates is head of the fire department in Glens Falls and has been so for many years.



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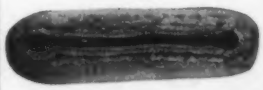

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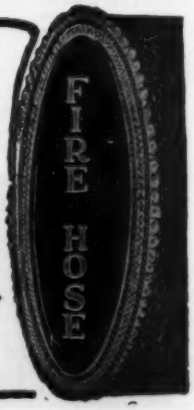

FIRE DEPARTMENT ACTIVITIES

Hartford, Mich., Has New Apparatus—Boyer fire apparatus has been delivered to Hartford, Mich.

DeKalb, Ill., to Buy Fire Apparatus—DeKalb, Ill., is considering the purchase of fire apparatus.

Fire House Completed in Vallejo, Cal.—A new fire station has been recently completed in Vallejo, Cal.

New Pumper at Kenosha, Wis.—A new Peter Pirsch pumper has been purchased by Kenosha, Wis.

Fire Station Opened at Hamilton, Ohio—The new $40,000 fire station erected at Hamilton, Ohio, was opened recently.

Delaware Firemen Enlarge Membership—The goal of 1,000 members has finally been reached by the Delaware County, Pa., Firemen's Association.

New Fire House Opened in Logansport, Ind.—About two thousand persons attended the opening of the new fire station in Logansport, Ind.

Delphi Buys Fire Apparatus—The city council of Delphi, Ind., voted in favor of purchasing Ahrens Fox fire apparatus to cost approximately $5,800.

Guerneville Elects New Chief—G. R. Starrett was elected chief of the Guerneville, Calif., Fire Department at a meeting of the commissioners held recently.

Liberty, Ind., Receives New Apparatus—Liberty is now the possessor of a new 500-gallon pumper. The estimated cost of the apparatus is $6,750.

Fire Department Organized at Victorville—At a recent meeting held at Victorville, Calif., a volunteer fire department was organized. Claude J. Goodrich was elected chief.

Fire District Contemplated at Hampton Bays—The organization of a fire district is being planned at Hampton Bays, N. Y. At the present time this town has no fire department.

Ottumwa Considering Purchase of New Apparatus—The question of purchasing apparatus of a lighter weight than that now in use at Ottumwa, Ia., is being considered.

Purchase of Apparatus Planned at Waverly, Ia.—Funds are being raised at Waverly, Iowa, for the purpose of purchasing fire apparatus to fight rural fires.

Fire Station to be Opened at Scienceville—The new fire station being erected in the Scienceville section of Youngstown, Ohio, will be completed shortly.

North Kansas City to Erect Fire Station—The city council of North Kansas City, Mo., recently authorized the erection of a new building to house city offices and the fire and police departments.

Harrington, N. J., to Insure Firemen—Harrington, N. J., is to take out compensation insurance for the twenty-five members of the department. The premium on the policy is based on the yearly payroll.

New Fire Station at Vallejo, Calif.—The new bungalow type fire station erected on Maryland and Alameda streets, Vallejo, Calif., was recently opened for inspection. A new $14,000 fire engine is housed in this building.

Fire Station Planned for Fish Creek—The town of Fish Creek, Wis., recently voted in favor of a project including the purchase of a new fire engine and hose, and the erection of a fire station.

New Fire Station Contemplated at Jamestown—Bids were received recently by the city council of Jamestown, N. Y., for the erection of a new fire station at Allen and Buffalo streets.

Apparatus Purchased by Elmhurst, Ill.—Apparatus costing $10,500 fire truck has been purchased by Elmhurst. The machine will be equipped with a 750 gallon pumper and all of the latest fire fighting equipment.

Greenville, Ohio, to Purchase Fire Truck—Bonds to the amount of $14,840 have been approved by the state attorney general for the purchase of new fire apparatus for Greenville, Ohio.

New Fire Station for La Porte, Texas—The city council of La Porte, Ind., is going ahead with plans for the erection of a new city hall and fire station. The estimated cost is $12,000.

Evansville Purchases Fire Alarm Equipment—The Board of Public Safety has awarded contracts amounting to approximately $5,000 for fire alarm cable, fire alarm boxes and pedestals for the boxes.

Fire Truck Considered for Campbellsport—The town boards of Ashford and Auburn, Wis., are considering the joint purchase of a $3,000 fire aparatus to be housed and maintained by the village of Campbellsport.

Chief Ritter of Clifton, N. J., Dead—Funeral services were held for Adam A. Ritter, Chief of the Clifton, N. J., Fire Department. Officials from Clifton and nearby communities attended the services.

Fontana Purchases New Equipment—A new piece of fire apparatus, costing approximately $4,000, and equipped with two booster tanks and hand chemical extinguishers, has been purchased by the village of Fontana, Wis.

Montague, Mich., to Purchase New Apparatus—The city council of Montague, Mich., has invited bids on new fire apparatus. It is expected the final decision as to type of equipment to be purchased will be made shortly.

Yonkers to Extend Fire Alarm System—The common council has authorized the purchase of wiring and other necessary equipment for the extension of the fire alarm system.

New Apparatus at Tazewell, Va.—A new pumper has been purchased by the town of Tazewell, Va. The apparatus, after being tested, was found to be satisfactory. This equipment will afford better fire protection.

New Fire Station Site at Florence—Fire Commissioner Towl and Fire Chief Cogan have agreed that the new Florence, Neb., fire station should be moved eight blocks south to Thirtieth and Hanover Streets.

Sharon May Form Fire Department—One of the things to be considered at the November election is the formation of a fire department. The voters will also be called upon to vote on a $6,000 bond issue for the purchase of fire apparatus.

Erection of Fire Station Approved at Aberdeen—The city commission of Aberdeen, S. Dak., has approved the plans submitted for the new fire station to be erected on the north side and authorized the city auditor to advertise for bids.

Edwardsville, Ill., to Pay Volunteers.—Volunteer firemen of Edwardsville, Ill., will be paid one dollar for responding to fires where chemicals are used and two dollars at fires where hose lines are used. No money will be paid for responding to a false alarm.

Erection of New Fire Station Considered at Wheeling—A proposal to include the construction of a central fire station for the Pike district in a fire department expansion plan under consideration was given definite approval at a meeting held recently. The project under consideration will entail an expenditure of approximately $90,000.

W. J. Sand Named Chief of Quincy, Mass.—Deputy Chief William J. Sand has been appointed chief of the fire department of Quincy, Mass., as successor to Chief Alfred L. Mead whose death occurred recently. Chief Sand was made a permanent fireman in 1920 and has been deputy chief for the past three years. Capt. James C. Gallagher has been named as deputy chief.

Impatient Firemen Burn Many Homes—New fire hose was delivered to Aledsha, Lithuania, and the firemen were very anxious to give a practical test. The firemen donned their bright uniforms and started a fire of their own. The hose was directed towards the old barn, now aflame. Unfortunately a stiff breeze carried flames to nearby houses, and before the fire was brought under control, 100 houses were destroyed.

Boston Firemen Participate in Celebration—The Boston fire department made a fine showing in the recent Massachusetts Tercentenary parade. The firemen were headed by the fire department band which was organized last summer. There were details of firemen from nearby cities headed by chiefs' cars. In another division of the parade were members of veteran firemen's organizations with some famous old "hand tubs."

PROPOSED IMPROVEMENTS

Sea Cliff, N. Y.—Reports state Village Board considering possibility of erecting a municipal building and fire station.

Tuckahoe Co., N. Y.—Eastchester Township Board and Township Fire Commissioners to discuss purchase of a new rescue wagon for the fire department. Arthur Stuehl, Chief.

Tulsa, Okla.—National Board of Fire Underwriters recommended that city establish ladder companies with Engine Companies 10 and 11, provision of an isolated fire alarm headquarters and installation of additional fire alarm boxes. R. E. Pitts, Chief of Fire Dept.

Ambridge, Penn.—Reports state Center Township fire department held meeting to discuss plans for purchase of new fire equipment including a chemical truck.

Marathon, Iowa—Volunteer fire department raising funds to purchase equipment.

Baltimore, Md.—According to reports Fire Board and Chief Emrich have selected site near Shannon Drive for erection of fire station.

Cambridge, Mass.—City Council urging erection of proposed fire station at Quincy and Cambridge streets in the near future, according to reports.

Meridan, Miss.—National Board of Fire Underwriters recommended the organization of a ladder company equipped with combination city service truck and located in new fire station to be built at or near present location of Hose Co. 4, W. F. C. Partin, Chief of Fire Dept.

Portsmouth, Iowa—Town Council considering purchase of fire apparatus for town and rural fire protection, according to reports.

Ridgeway, Iowa—A fire company was organized here with Raymond Herwig as chief.

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Special Squad Planned for Eastchester

Chief Arthur Steuhl of Eastchester, N. Y., is planning a special emergency squad composed of especially trained firemen. The Town Board has appropriated $11,000 for the new unit. While the present fire department is properly equipped, it is lacking in rescue equipment.

The new apparatus would carry nets, torches, special gas masks, flood lights, special jacks, and other equipment. Chief Steuhl said that the acquisition of the new rescue car would require the appointment of two additional firemen.

The Eastchester township staged its annual parade and review, and at the same time opened up the new $40,000 fire station for public inspection. Following the inspection, the Fire Commissioners were hosts to local officials and visiting fire department representatives at a dinner held in Tuckahoe.

Old Pumper Wins Prize

Apparatus of the Rescue Hose Company of Greencastle, Pa., said to date back to 1741, and which was exhibited in the Washington, D. C., labor day parade, won first prize for the oldest pumper in the United States.

The apparatus is still in good condition and it has been awarded prizes at a number of firemen's conventions where it was exhibited. The pumper was built in 1741 although the name and location of the manufacturer is not known. According to the best known records the pumper was purchased second-hand from Baltimore in the nineteenth century.

The body of the engine is a box or trough six feet six inches long, by two feet one inch wide, and one foot five inches deep. It rests on iron axles, the back one of which is bolted fast to the trough and is fixed. The front or under part of the engine was modernized in 1858 by removing part of the bottom to put in a fifth wheel in order to turn and save the trouble of lifting it around. The original solid wooden wheels were replaced by the modern spoke wheel of today. The arms extended out across the front and rear end of the engine and were used to guide and lift it around, for it had no tongue in its primitive condition.

A large cylinder, three feet six inches high, stands in the bottom center of the trough and tapers from six inches at the bottom to nine inches at the top. In the front and rear of his cylinder are two small cylinders in which the piston rods work alternately in connection with the handles. The main or storage cylinder into which the water is forced from the two small cylinders is incased with wood with a platform over the top on which the nozzleman stands to direct the stream. The handles are on the front and back part of the engine and are worked up and down by six men on the engine and six on the ground. On the two sides of the casing forming the top and platform, looking to the front and back of the engine, is the name "Rescue, built 1741." The nozzle on the top of the engine has a swivel joint and can be held in any position. The nozzle is over six feet long and made of brass.

Water was supplied from a leather bucket brigade that lined up in two columns from pump to engine, passing the filled buckets down the one column from pump to engine and the empty buckets up the other column from engine to pump.

Every taxpayer was enrolled as a member of the fire company and on days when they were called out for practice the chief director stood on top of the engine and called the name of each member; those not answering were fined ten cents each.

San Francisco Has New Fire Laws

Perhaps the most important achievement of the San Francisco Junior Chamber of Commerce to date, in fire prevention work, has been accomplished prior to Fire Prevention Week in the adoption of the new fire ordinance. Work on the ordinance was started a year and a half ago.

Other projects completed by the Fire Prevention Committee during the past year were the adoption of a new X-ray film ordinance, the addition of several ladders to the fire department, inspections by company officers, greater response to telephons alarms, and an increase in the personnel of the fire prevention bureau.

Projects still in process by the Fire Prevention Committee include better fire protection for the waterfront, centralization of fire prevention activities among the city departments, and adoption of the assignment system and the establishment of a fire college.

A movement is also being started to both enlarge and modernize the fire fighting facilities of the city by the replacement of some thirty-five engine companies with new equipment, the rebuilding of a number of fire houses, the building of repair shops for the exclusive use of the Fire Department, and the extension of the high pressure system in certain thickly built portions of the city which now are served only by small mains under low pressure.

A fire council may be formed for San Francisco, to which will be invited representatives of all the civic organizations of the city. This fire council will act as a super committee on fire prevention activities, and will be able to give great power to the efforts of the Junior Chamber of Commerce when called upon for help in any difficult problem.

Fire Prevention Week this year was under the direction of Robert M. Levison, Chairman of the Fire Prevention Committee; J. S. Garnett, Chairman of Fire Prevention Week; and the following sub-chairmen: B. F. Gardiner, Geo. D. Clark, Jr., Chester R. F. Cramer, James G. Flaherty, C. I. Haley, Thomas Larke, Jr., Robert St. John Orr, Robert Lee St. Clair, and Leonard White.

CHARLES W. GEIGER.

CONVENTION DATES

Oct. 15—FIRE CHIEFS' EMERGENCY PLAN OF WESTCHESTER COUNTY. Regular meeting and Mayors' Night. Fire Headquarters, Mt. Kisco, N. Y. Secretary-Treasurer, E. Riviere, Fire Headquarters, Larchmont, N. Y.

Oct. 21-23—NEBRASKA STATE VOLUNTEER FIREMEN'S ASSOCIATION. 49th Annual Convention (2d in year), Scottsbluff, Neb. Secretary-Treasurer, H. A. Webbert, Kearney, Neb.

Oct. 21-23—RAILROAD FIRE PROTECTION ASSOCIATION. 17th Annual Convention, St. Louis, Mo., Secretary-Treasurer, R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

November—SONOMA COUNTY FIREMEN'S ASSOCIATION. Annual Convention, Petaluma, Cal.

Nov. 15—KEYSTONE FIRE CHIEFS' ASSOCIATION. 29th Annual Convention, Lancaster, Pa. Charles O. Oyler, Convention Representative, 315 S. 14th St., Harrisburg, Pa.

May 11-16, 1931—NATIONAL FIRE PROTECTION ASSOCIATION. 35th Annual Meeting, Toronto, Ont., Can. Managing Director, Franklin H. Wentworth, 60 Batterymarch St., Boston, Mass.

May 21, 1931—IOWA STATE FIRE CHIEFS' ASSOCIATION. Annual Convention, Ames, Iowa. Secretary-Treasurer, Chief L. R. Morris, Ames, Ia.

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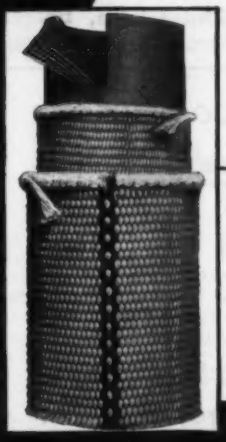
The hose with an unsurpassed reputation for QUALITY AND SERVICE that has made it the STANDARD OF THE WEST for over twenty-five years...and now gaining rapid acceptance in all parts of the country.



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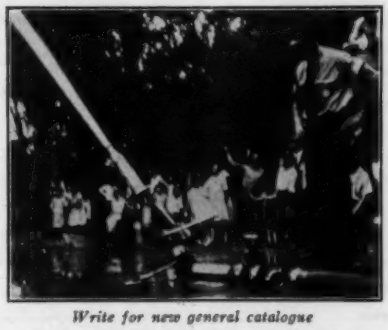

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No. 1. (Capacity 3 to 7 tons; weight, each, 72 lbs.)

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Complete information and Prices on request.

It's often necessary to move apparatus at a fire. Automobile traffic hates to be held up by a line of hose stretched across the right of way.

Why ruin your hose by driving over it? Or waste valuable time cutting off and disconnecting?

The Wausau Protector is a big time and money saver—easy to handle and carry. Order a set today, or write us for particulars

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JOHN H. CLAY, INC.

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Established 1864

Clay Automatic Door Opening Devices for Fire Station Doors Opening either In or Out. Save valuable minutes in getting to fires. Send for Bulletin.

You'll Enjoy Every Issue!

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G

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RENSSELAER VALVE CO.,
TROY, NEW YORK.

Send Catalog "G" to

Name .....

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The Deadly Dust Explosion

(*Continued from page* 884)

smoldering in the bin, or by the fire from a nearby furnace. The firemen were caught in the flames from the resulting explosion and received injuries from which six of them died.

Need for Periodical Inspection of Buildings

Some fires, apparently extinguished after a fw minutes, have become disastrous because the fire department did not know the many flues, vertical openings, openings in fire-walls, concealed spaces, and other avenues for the fire to spread. Only close inspection of a building will give this important information.

In order that the members of the fire department may become acquainted with the dust hazard some provisions should be made for periodical inspection of industrial plants and manufacturing establishments. Inspections of this character serve principally three important purposes:

1. Conditions which may cause or help to spread fires are discovered and remedied.
2. Firemen become thoroughly familiar with the structural conditions of the buildings and the hazardous manufacturing processes carried on in them.
3. A definite knowledge of the contents of the buildings and of any hazardous products handled and manufactured is secured.

Use of Heavy Stream

Explosions have occurred during the fighting of fires that at the time were difficult to understand. In some cases investigations have revealed that a heavy stream of water striking a pile of dust has forced the dust into suspension where it became ignited by the flames from the fire. In one instance of this kind an explosion, which injured several persons, took place when a heavy stream of water struck a pile of cork dust and forced the dust into the fire.

Precautionary Measures Recommended

The following precautionary measures are suggested as possible means of dealing with the various explosion causes referred to:

1. Instead of removing immediately the contents of bins in which a fire has occurred and is apparently extinguished, it would be better to flood the bin and thoroughly drench the material before undertaking to remove the contents.
2. Plants should be systematically inspected by firemen to acquaint them with any dust explosion hazards. This would prevent the unnecessary exposure of firemen to dust explosions.
3. When wetting explosive dusts stored in piles, a spray would be preferable to the heavy pressure from the hose.

Work of Dust Explosion Hazards Committee

The Dust Explosion Hazards Committee of the National Fire Protection Association has prepared safety codes for a number of industries in which the dust explosion hazard is present. These codes have been adopted by the National Board of Fire Underwriters and have also been approved by the American Standards Association. The following codes have been prepared by this committee:

1. Flour and Feed Mills.
2. Sugar and Cocoa Pulverizing.
3. Pulverized Fuel Installations.
4. Terminal Grain Elevators.
5. Starch Factories.
6. Coal Pneumatic Cleaning Plants.
7. Wood Floor Manufacturing.
8. Spice Grinding Plants.
9. Use of Inert Gas for Fire and Explosion Prevention.

These safety codes have been very helpful in bringing about the application of precautionary measures which have been instrumental in reducing losses from dust explosions and fires.

Cooperation with U. S. Department of Agriculture

The United States Department of Agriculture is desirous of cooperating with firemen in the application of measures for the prevention of dust explosions during fire fighting. The department will be glad to render any assistance in connection with this matter and extends a cordial invitation to you to communicate at any time with the engineers in the Bureau of Chemistry and Soils in connection with any problems relating to dust explosions. We are very glad to have had an opportunity to discuss the subject at this meeting and hope this address will be helpful in reducing loss of life and property from dust explosions and resulting fires.

(Excerpts from a paper read before the annual convention of the International Association of Fire Fighters, at Halifax, Nova Scotia.)

Mayer Cup Winners Announced

The committee on awarding the Mayer Cups, under the chairmanship of Chief George M. Bower of Rome, N. Y., has filed the following report of awards:

Class 1 prize to Newark, N. J. Honorable mention to Cincinnati, Ohio, and Dallas, Tex.
Class 2 prize to Auburn, N. Y. Honorable mention to Baton Rouge, La., and Springfield, Mo.
Class 3 prize to Marshfield, Ore. Honorable mention to Prescott, Ariz., and Bainbridge, Ga.

The Pacific Coast Association won the District Flag for the greatest increase of members during the past Association year.

Statement of Ownership

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of FIRE ENGINEERING, published bi-weekly at New York, New York, October 1, 1930.

State of New York, County of New York, ss.:

Before me, a Notary Public in and for the state and county aforesaid, personally appeared I. H. Case, who, having been duly sworn according to law, deposes and says that he is the Business Manager of FIRE ENGINEERING and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of Congress of August 24, 1912, embodied in section 443, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher—Case-Shepperd-Mann Publishing Corporation, 24 West 40th Street, New York City.

Editor—Robert H. Lockwood, 24 West 40th Street, New York City.

Managing Editor—Fred Shepperd, 24 West 40th Street, New York City.

Business Manager—I. H. Case, 24 West 40th Street, New York City.

2. That the owners are:

Case-Shepperd-Mann Publishing Corporation, 24 West 40th Street, New York City.

I. H. Case, 24 West 40th Street, New York City.

Fred Shepperd, 24 West 40th Street, New York City.

Karl M. Mann, 24 West 40th Street, New York City.

Robert H. Lockwood, 24 West 40th Street, New York City.

3. That the known bondholders, mortgagees, and other security holders, owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

I. H. CASE.
Business Manager.

Sworn to and subscribed before me this 25th day of September, 1930.
(Seal) ELLEN E. DUNCANSON.
(My commission expires March 30, 1932.)

Fire Station Completed in White Bear Lake, Minn.

A new fire station has been erected in White Bear Lake, Minn., at a cost of $20,000. It is equipped with a hose tower, electric door openers, sliding pole, sleeping quarters, a well for winter practice, and other modern features. The department of which Fred F. Campbell is chief consists of two companies. The men drill at regular intervals.

FALSE ALARMS

IMPERSONATION

Regardless of the local law which made such a practice a violation, many motorists persisted in following fire apparatus and parking near the fire. That is what prompted the following conversation, late that night.

"Some man jumped on the running board of my machine and kinda quick-like asked for five dollars. I gave it to him, but I found out later that it was a new kind of racket that some one was starting around here.

"Gee whiz! You should have had him arrested for impersonating an officer."

If it keeps on, it's going to be pretty tough on the police in the future. They'll not only have to go out and apprehend the defendant, they'll have to go out and find the judge to try him.

PAINFUL CAUSE

Whether there are fires or not, life goes by the open doors of the station unmindful of any firemen who may be leaning against the chain across the doorway.

A little boy went slowly by, crying as though there wasn't a thing in this world to alleviate his suffering.

"What are you crying for?" asked the man in a friendly sort of way.

"I got a licking," was the answer.

"What for?"

"For crying."

FALSE ALARM

A policeman came home late, and undressing in the dark, slipped into bed. His wife woke up and said:

"Clancy, would ye moind runnin' out and gittin' me a headache powder —me head's splittin'!"

Clancey fumbled into his clothes and obliged. The druggist served him and said as he handed him the powders, "By the way, aren't you Officer Clancey?"

"Yes," answered Clancey.

"Then what are you doing in that fireman's uniform?"

SPOTLESS

At last it became known why Berg, a husky, regular he-man carried a silk handkerchief. Whenever any one touched the new pumper that was destined to his care, Berg went over and rubbed the handkerchief on the spot.

A garage fire in Brooklyn destroyed more than one hundred autos. Many families lost everything they had.

SHE WON

Murphy strolled around to the station on his night off. His wife had gone to the movies and he had no place to go. The boys started to tease him about a very loud patterned necktie he was wearing.

"But you don't mean to tell me that you bought that new tie just to satisfy a whim of your wife's?"

"Ah, you don't know," said Murphy. "She has a whim of iron."

POINT OF VIEW

A woman driver had cut in on a fire apparatus that was on its way to a fire. An accident resulted, and the woman was haled to court. The lieutenant was the chief witness for the fire department. The attorney for the woman said:

"You have heard what the last witness said, and yet your evidence is to the contrary. Am I to infer that you wish to throw doubt on her description?"

The polite lieutenant, with a wave of his hand, answered:

"I merely wished to make it clear what a liar I am if she's speaking the truth."

The trouble with playing football is that you're apt to get athlete's foot on the neck.

NECESSARY SILENCE

A jury was being impaneled to hear the case of the city against the street car company for damage to fire apparatus. A possible juryman was being interviewed:

"You are a property holder?"

"Yes, your honor."

"Married or single?"

"I have been married for five years, your honor."

"Have you formed or expressed an opinion?"

"Not for five years, your honor."

CONDITIONS CHANGED

The hotel clerk suspiciously viewed the contents of a bag that had opened while the guest was registering. A strange contrivance was disclosed.

"May I ask what that queer thing is?"

The prospective guest replied, "This is a new patent fire escape. If your hotel caught fire, I could let myself down from the window so easily—see?"

"Yes I see," said the clerk. "Our terms for guests with fire escapes are invariably cash in advance."

"Here's where I drive another argument home," said the taxi driver as he opened the door for Mr. and Mrs.

POOR OPINION

An English professor asked a student, "How would you correct this sentence: 'Before any damage could be done, the fire was put out by the volunteer fire department.'"

The student replied, "The fire was put out before any damage could be done by the volunteer fire department."

—Drawing and Story by "Art" Espey

Hazzard and Sullivan Bring Home the Bacon from Winnipeg

All who attended the Winnipeg convention of the International Association of Fire Chiefs will remember the royal reception and entertainment. Some, however, may have missed out on a little incident that is as much a part of the convention as some of the all-night parties. Chief Joe Sullivan, of Utica, N. Y., and Bob Hazzard, of the American-LaFrance, expressed a selfish perhaps piggish desire to carry home some fitting memento of the convention. Joe wasn't satisfied with carrying back the laurels of being President and Bob wanted more than the contracts secured, for they had both promised the folks back home that they would "bring home the bacon." Several kindly disposed chiefs decided to do things. On the return trip, somewhere between Toronto and Buffalo, a living sacrifice decorated with a pink necktie, was presented to both Joe and Bob. The respective families of the two men now boast of the acquisition of some real provincial pork, and perhaps if the two piggies cultivate a comradeship similar to that which exists between Joe and Bob, little piggies will repeat the story of how certain animal ancestors rubbed shoulders with two mighty good sports.

YOUR CATALOG PAGE

Fire Protection Equipment and Supplies

1 Acid Siphons.
2 Adaptors for Changing Hydrant Threads.
3 Acid Jars and Rings.
4 Aerial Ladders, Detachable.
5 Aerial Trucks.
6 Alarms, Siren, Electric.
7 Alarm Systems, Industrial.
8 Alarm Systems, Municipal Telegraphic.
9 Alarms, Thermostatic.
10 Asbestos Clothing.
11 Badges, Insignias, Buttons, etc.
12 Banners, Trumpets, etc.
13 Battery Jars.
14 Battery Zincs for Fire Alarm Batteries.
15 Bells, Fire Alarm, Municipal
16 Body Equipments.
17 Boxes, Gongs, Reels, Registers, Fire Alarm.
18 Brakes, Air.
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20 Brooms, Fire.
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22 Caps, Firemen's.
23 Chains, Non-Skid Fire Apparatus.
24 Chassis for Fire Apparatus.
25 Chemical Engines and Tanks.
26 Chimney Cleaning Compounds.
27 City Service Trucks.
28 Coats & Suits, Firemen's Quick Hitch.
29 Combination Chemical & Hose Cars.
30 Cutting & Welding Equimpent Blow Torch.
31 Cutting & Welding Equipment, Electric.
32 Deluge Sets.
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54 Helmets, Metal, etc.
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58 Hose, Chemical.
59 Hose Holders.
60 Hose Jackets.
61 Hose Standardization Tools.
62 Hydrant Draining Pumps.
63 Hydrants, Fire.
64 Jacks for Fire Trucks.
65 Jacks, Shoring & Prying.
66 Ladders, Fire.
67 Lightning Arresters.
68 Motorcycles, Fire Dept. Equipped.
69 Nets, Life.
70 Nozzles, Pipes & Misc. Brass Goods.
71 Packings, Pumps.
72 Pads, Pole Hole.
73 Paints, Fire Resisting.
74 Priming Ether, Motor.
75 Pumping Cars, Standard.
76 Pumping Cars, Foam.
77 Pumps, Fire Apparatus.
78 Pumps, Fire Service, Stationary.
79 Pumps, Portable for Fire Protection.
80 Record Books, Fire.
81 Relief Valves.
82 Reviving Apparatus, Oxygen.
83 Rubber Clothing.
84 Searchlights.
85 Shingles, Fire Retardant.
86 Shirts, Firemen's Special.
87 Sirens, Apparatus & Chiefs' Cars.
88 Sliding Poles.
89 Soda & Acid Chemicals.
90 Spark Plugs, Fire Apparatus & Motorcyles.
91 Squad and other Auxiliary Cars.
92 Sprinkler Head Shut-Offs.
93 Sprinkler Supervisory Service.
94 Sprinkler Systems, Automatic, Foam.
95 Sprinkler Systems, Automatic, Water.
96 Starters, Fire Apparatus, Automatic, Air.
97 Steam Fire Engines.
98 Tarpaulins & Fire Blankets.
99 Tetrachioride Chemicals.
100 Thawing Equipment, Hydrant.
101 Tires, Fire Apparatus, Pneumatic, Solid, Cushion and Non-Skid.
102 Tractors.
103 Traffic Clearing Systems.
104 Triple Combination Pumping Cars.
105 Uniforms.
106 Water Towers.
107 Wheels, Cushion.
108 Whistles, Fire Alarm, Compressed Air
109 Whistles, Fire Alarm, Steam.
110 Whistles, Fire Apparatus.
111 Wrecking Trucks.

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Nos. .....

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City and State.....

For Information on Any Equipment Not Listed, Write on This Page or Use Separate Sheet 10-15

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All Sizes

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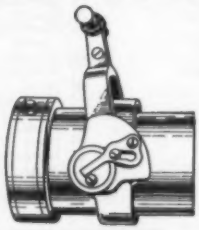

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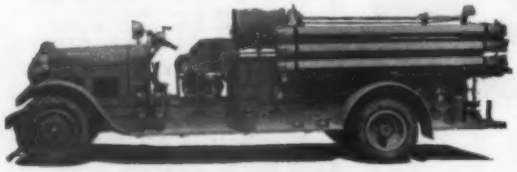

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THE PUBLISHERS.

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The Publishers

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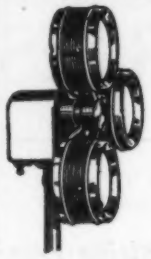

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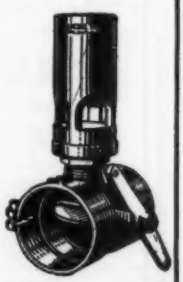

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BUCKEYE

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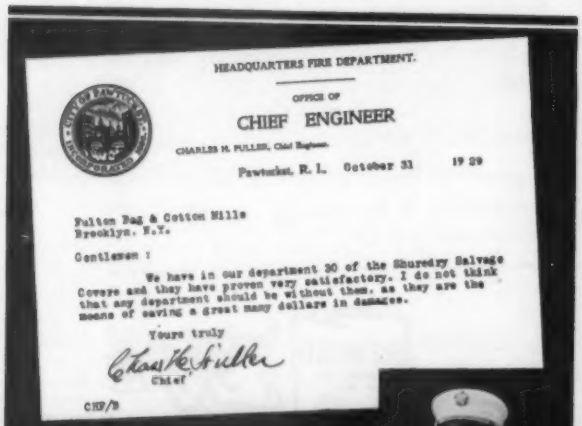

HEADQUARTERS FIRE DEPARTMENT.

OFFICE OF

CHIEF ENGINEER

CHARLES H. FULLER, Chief Engineer.

Pawtucket, R. I. October 31 19 29

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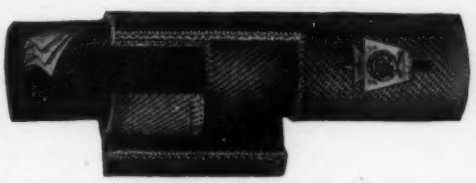

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Boston	Dallas	Baltimore	Portland (Ore.)	Los Angeles	Pittsburgh

FABRIC
WAX AND PARA GUM TREATED COTTON
FIRE HOSE

Mack

FIRE APPARATUS

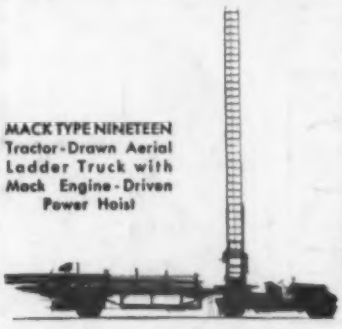
MACK TYPE FIFTY
500 Gallon Pumper

MACK TYPE NINETY
750 Gallon Pumper

MACK TYPE NINETEEN
1000 Gallon Pumper

MACK TYPE NINETY
City Service Hook and Ladder

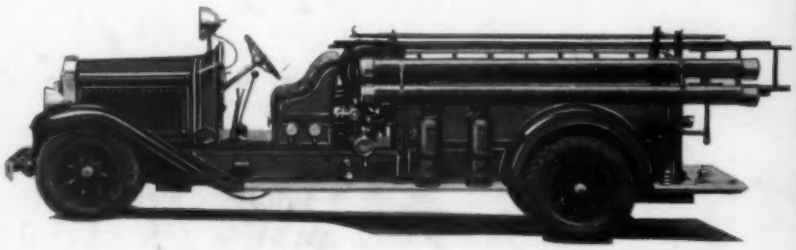
THE MACK ENGINE DRIVEN POWER HOIST



MACK TYPE NINETEEN
Tractor-Drawn Aerial Ladder Truck with Mack Engine-Driven Power Hoist

A MACK Type Fifty—500 gallon Triple Combination Pumper, Hose and Booster Tank. Revere, Mass., Collegeville, Pa., and Glenwood, Iowa, have recently purchased units of this type.

EVERY CITY AND TOWN CAN NOW HAVE THE SECURITY OF MACK PROTECTION



The complete line of Mack Fire Apparatus makes available a full range of capacities and combinations, offering maximum fire protection and meeting each specific fire-fighting need.

Every Mack unit provides a greater measure of safety and dependability because of exclusive Mack design, quality materials and superior construction . . . not to mention faster get-away, quicker-responding four wheel brakes, and high safe speed.

Municipalities who have had trouble replacing obsolete parts of "orphaned" equipment welcome the lifelong protection of the unit, assured by the tremendous resources of the Mack organization.

Every city and town can now have the security of Mack protection.

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More than 100 direct Mack Factory branches are equipped to service Mack Fire Apparatus in any emergency

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